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## ORIGINAL ARTICLES

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### PRESIDENT'S ADDRESS BEFORE THE SOUTHERN SOCIETY OF ORTHODONTISTS, MARCH 14, 1922

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CLINTON C. HOWARD, D.D.S., ATLANTA, GA.

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ABOUT twelve months ago in this same hall, it was my pleasure to meet with a small group of enthusiastic orthodontists whose purpose was the formation of a society, the highest aim of which would be in fostering the advancement of their chosen specialty. Today it is my greater pleasure to acknowledge the fruits of their efforts, so clearly manifest by your very presence here.

In a brief retrospection of thirteen years, it is recalled that at the beginning of this era the South was represented by only four orthodontic specialists. In this short period the number has increased to more than three score. Your Society boasts of thirty earnest members. That it will grow in worth can only be prophesied by the spirit of enthusiasm and good will as is shown at this, your initial meeting.

It has been said that aspiration is the law of human life; that every soul hungers for something vast and seeks that realm where it may be satisfied. It is not entirely impractical to apply such an esthetic sense to the organization of this group whose ambitions seek the lofty realm and whose purpose, as outlined in the tenets of our Society, couple the great deeds of service and efficiency. Because of such an institution our body social is made the benefactor, although the knowledge of this progress may, in reality, only be known to ourselves.

It will be all the more beautiful if we can render better service by the practical use of our combined knowledge without the lay public knowing of our existence as an organization. It is upon such a superstructure that this

little band is to be builded and the service we render as specialists in the great field of medicine will depend upon what we put into it with just that idea in view.

We always get out of something, particularly an organization, a return in direct proportion to what we put into it. If we put honest effort and earnest work into our Society we naturally create a community of interest which must be beneficial to all. If that follows, as I am sure it will, with every member enrolled, then we are "dowered with the wealth" of two united principles—Service and Study.

Paraphrasing the great Ingersoll, we might say that within the magic bonds of these great standards some gracious, potent spell, imprisoned lies that, when released by effort and application, steals within the fortress of our selfish instincts and binds in sleep the captured sentinels of commercial greed.

#### AIMS AND PURPOSES OF THE ORGANIZATION

You have only a few moments ago unanimously adopted a code of By-Laws and Constitution upon which will rest the superstructure of this organization. There seems to be no pillar of support that will equal in worth or endurance the one which sets forth "The aims and purpose" of this Society—which reads as follows: "That it is organized for the advancement of orthodontia as a science and the promotion of good fellowship among its members." Will you not agree that the aims as thus advocated are entirely interdependent? Could one be separated from the other and the first still function? Good fellowship is essential to the advancement of scientific orthodontia as there would be but little incentive on the part of a member to give the fruits of his researches did he not feel that his efforts would be received by a warmth of appreciation and gratitude.

Politics, in its "every-day" vulgar meaning must have no place among us. There should be no outstanding domination either by an individual member or group of members, for with such, friction will creep in and weaken the bonds of fellowship.

#### ORTHODONTIA, PAST, PRESENT, FUTURE

It is probably true that for more than a thousand years some attempts of a chaotic nature were made in the correction of "crooked teeth." It was left, however, to Fauchard of France definitely to record a system of mechanical orthodontic apparatuses. His literary contributions were published in the year 1726. From this time down through the eighteenth and nineteenth centuries, little progress was made. The names, Magill, Coffin, Tucker and Kingsley are no doubt familiar to you. Each did his bit in the evolution of mechanical appliances. In these early days of orthodontia little was accomplished along lines of diagnosis or etiologic phases, or as to physiologic changes in bone development.

If my memory does not err it was about 1895 that Dr. Edward H. Angle first conceived the idea that the teeth of one jaw actually had a definite relationship to the teeth of the opposing jaw. And further, that conditions of

malocclusion were similar in one of three respects, as follows: Either a normal anteroposterior relation of the arches, a posterior relation of the mandibular arch to the maxillary or an anterior relation of the mandibular arch to the maxillary. In short, he gave us a classification of malocclusion, or better expressed, a classification of jaw maldevelopment. One can but be impressed with the importance of his researches in this regard if you will visualize its direct influence in the sequential development of diagnosis and rapid evolution of appliances in the past twenty years. Fundamentally speaking, his work will stand as an epoch in scientific orthodontia.

The general conception of our work from the standpoint of malocclusion of the teeth has only in the past few years taken on a much broader vision. We now look beyond that which was once conceived to be a condition expressed by "crooked teeth" and accept these malplaced teeth as a result, the condition being a perversion of bone development. To summarize the latter expression, the bone structure in which the teeth develop and erupt, must be of proper volume and shape to permit of normal occlusion. Here we have a hypothesis to base our further researches in broadening our conception of etiology and diagnosis. We immediately pass beyond the narrow bounds of tooth arrangement and begin to see expressions of histologic, physiologic and biologic phenomena.

Permit the prediction to be made that the future scientific strides in our specialty will not be confined to further development of mechanical appliances, but will proceed from a greater vision into the correlation of jaw development with a perversion of general skeleton development.

Apparatuses for the placement of teeth are perfected to a state of efficiency to satisfy the most exacting technician but who among us will doubt that we have deficiencies of diagnosis? Is there a living orthodontist with a mental perspective backed by years of experience who will emphatically state that all conditions of malocclusion embracing the three great classes can be accounted for by the present accepted etiologic factors? A conception of local causes is readily perceived. A loss of approximal contact in perverting normal occlusion, or a lip-habit or a tongue- or cheek-habit, a pacifier or thumb sucking, will each disarrange the normal position of teeth. The results of such causes are easily analyzed and accepted as most tangible facts. On the other hand can we be satisfied with the stereotyped explanation for the productive agent of the two great groups of malformation known as "Class 2—Division 1" and Class 3"? In these anomalies we are confronted by more than tooth disarrangements. The body of the mandible, the superior maxillae, the maxillary sinuses, the internal structures of the nose and middle face, are all defective. This being agreed, then how can we even pause in considering the malrelation of the teeth as a condition when under such circumstances their positions are, *per se*, not at fault, but the actual malformation of the bones should first demand our serious analysis? To carry the thought still further the jaws and their immediate associated bones are integral parts of the total skeletal structure. Can we separate, as though a dividing wall intervenes, the jaws and their development from the general metabolism of the en-



tire skeletal formation? Then why should the researches of the orthodontist be, for a moment, confined to the narrowness of one field of study? Is there a branch of medical science which is not interdependent with every phase of the human organism? Suffice it to say, that certain malformations of the bones constituting the dental arches and jaws may some day be treated *without mechanical appliances*, but recognized and diagnosed as merely a correlation of a general physical deficiency.

Orthodontia is about to be challenged in this regard. Shall we decline a more far-reaching outlook and be content with our present knowledge, or shall we collaborate with other interested allied sciences and thereby earn a greater recognition in the realm of curative medicine?

#### CONCLUSION

Orthodontia, in the blessed realm of Dixie, has become a distinct entity, and this organization, by its very act of unity has cemented a group with a definite purpose who go forth, not only to the dental profession, the medical profession, but to the public with a real place in the economy of the human status.

The progress of orthodontia has been slow, as the history correctly records. The history of all real achievements shows various barriers, which when penetrated or overcome, develop the roadway lying midway between enthusiasm and criticism. We have been the target of not only our profession but of that of every allied profession, and yet we emerge with a banner unsullied and unstained with something to offer of fixed value. This very fact vindicates the purpose of this organization and we should feel proud that we are privileged to sit among the organizers of the Southern Society of Orthodontists and participate in the deliberations of men who would, without the idea of personal aggrandizement, offer their experience and judgment as a framework for a common good to a greater number.

We have however yet a greater duty—that of study. We realize our shortcomings and this very fact should be a stimulus for research hitherto unknown in this section.

This organization, now small, should be a pet of ours. We should nurse it and fondle it and raise it as we would our baby. However, there is but one way to do that, and that is to remember its purposes: the meeting and exchanging of ideas, the report of failures, the reason for successes and the dull grind of finding something new. We all have successes and failures, but new ideas from systematic study are the things that will make our association a permanent and successful organization.



## ORTHODONTIC TREATMENT COMPLICATED BY REPLANTATION OF AN UPPER LATERAL\*

BY WALTER A. CRANE, M.R.C.S., L.R.C.P., L.D.S.

THIS case is not intended as an orthodontic triumph at all, being a small case which presented itself minus the left upper lateral incisor. On December 20 last year the child was brought for consultation, and examination proved, as will be seen from the models, that the molars were in slightly distal occlusion. The upper centrals were rotated distally, while the right lateral was very much protruding mesially, with no signs of the left one, which proved to have been kicked out during physical exercise at school fourteen days before. The socket was almost granulated up, but not com-



Fig. 1.

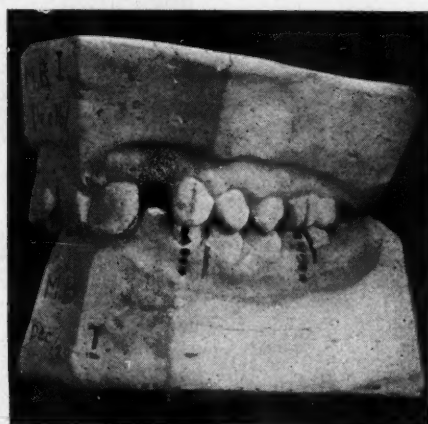


Fig. 2.

pletely so. A hunt was made for the tooth, and it was brought in the following day covered with garden sand and ink, and I attempted to wash it as well as possible in hot water without actually boiling it, and soaked it in normal saline solution for eighteen hours. The canal was cleared out and filled in the usual way with G.P. points. On the sixteenth day after the accident the lateral was replanted under novocaine by curetting the socket and fastened with the usual covering splint. The child had a tubercular scar of twelve months' duration on her neck, and the mother was anxious to have no more done than absolutely necessary for fear of injuring the child's general health.

In the first model you will see the slightly distal condition of the molar with the crowded condition in the front.

The splint was taken off on April 1, three months afterwards. The position on the model shown here corresponding, from the mother's statement to that before the accident, though at the time of replantation some difficulty

\* Delivered to the British Society for the Study of Orthodontics, October 3, 1921.

was experienced owing to the central and canine having come somewhat together.

The tooth is perfectly healthy, with no sign of a pocket of any description. I thought it right to insert an inclined plane in the upper jaw, and you will see the models of the case as it is now. It is not otherwise an exceptional orthodontic case, but as the mother would not undertake any further treatment than permitting the centrals to be rotated and drawn out



Fig. 3.



Fig. 4.

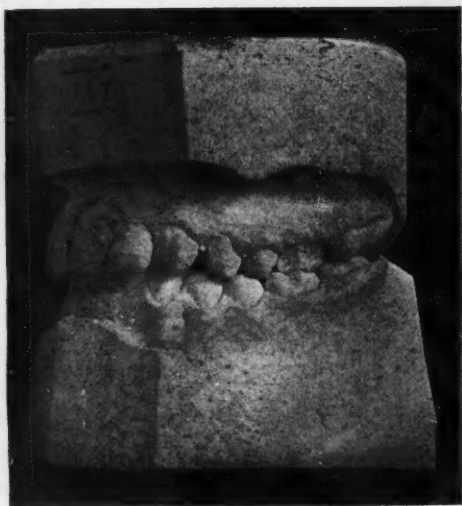


Fig. 5.

with an Angle's apparatus and an inclined plane put in as a retention apparatus, the treatment had to cease.

The President said Mr. Crane had presented a case of some considerable interest, and, although it varied somewhat from ordinary orthodontic treatment, it was no doubt a matter which the members would like to discuss.

Mr. Pitts suggested that in a case where the tooth was contaminated with soil there might be a possible risk of tetanic infection. The method

of sterilizing the tooth did not seem very adequate from that point of view, and he would like to know if planting the tooth in the socket provided any ground for such an organism, which was anerobic.

The President said that some years ago he remembered Mr. Morton Smale referring to a case which came under his experience of a replantation of a lateral incisor tooth. It occurred in a fellow schoolmate. The lateral incisor had been displaced in the school playground when the patient and Mr. Morton Smale were schoolboys together. The tooth fell on to the ground and was immediately replaced in its socket, and Mr. Morton Smale heard no more concerning it until he met his fellow student twenty years later, when the matter was referred to. On looking into the mouth Mr. Morton Smale discovered that the tooth was still there. The only point of difficulty about it was that the tooth had been placed the wrong way round and had remained in that position from the time it had been replanted. The importance of such cases of replantation was that the teeth should be replaced immediately, and if the replantation was done under the precautions Mr. Pitts had mentioned, not only was it possible to maintain the healthy activity of the periodontal membrane but the pulp would remain vital also. He believed in Mr. Morton Smale's case the pulp was vital even after the twenty years.

Mr. Warwick James said he had once had a case at the Dental Hospital of a boy with a large dentigerous cyst associated with the left central incisor in the maxilla. The right central was displaced and rendered useless. The cyst and both the teeth were removed. Later the lateral incisor appeared at the posterior margin of the hard palate, apparently displaced by the cyst, and the right lateral had fallen a good deal across to the left side. He thought nothing could be lost by attempting transplantation of the tooth. He made a socket and removed the lateral from the palate and placed it in the best position in the front of the mouth, and the boy retained that tooth, and when he saw him three years later it was quite satisfactory. The house surgeon said that it reacted to heat and cold, but he himself thought it was very slow in its action. He did not destroy the pulp. It looked as if the tooth might remain for a very long time. The greatest difficulty he had was in obtaining tissue. There was so much loss of tissue owing to the removal of the cyst that the fold remaining was only about one-eighth inch thick, gradually widening towards bone. Only a short portion of the root of the tooth could be inserted in the bone, a socket being made by the use of a fine antral drill. He thought it an extraordinary thing that it should remain as it had done.

Mr. Crane quite agreed with Mr. Pitts, and said that his heart was in his mouth when he replanted the tooth as regards transmitting any infection. It was washed in hot water as well as possible and soaked. The proof of the pudding, however, was in the eating. It was not very surgical, but the child was in extremity and was going to be a pretty woman. It was a case of taking a chance. After fourteen days he did not risk more thorough sterilization, as there were a few fibres of periosteum still adhering to the root which he did not wish to destroy, if it could possibly be avoided.



## A CASE OF UNDERHUNG BITE\*

BY F. ST. J. STEADMAN, L.D.S., L.R.C.P., M.R.C.S.

THESE models illustrate a case of underhung bite in a boy aged 6½ years. The father and the father's sister also had the same condition. He had only seen the patient recently, when he had the condition shown in the models. The interesting question was whether anything could be done for him. Personally he was inclined to let it alone and do nothing. The actual cause appeared to be the usual one in such cases, an overgrowth of the ascending ramus. The only permanent teeth present are the six-year-old molars and left lower central incisor.

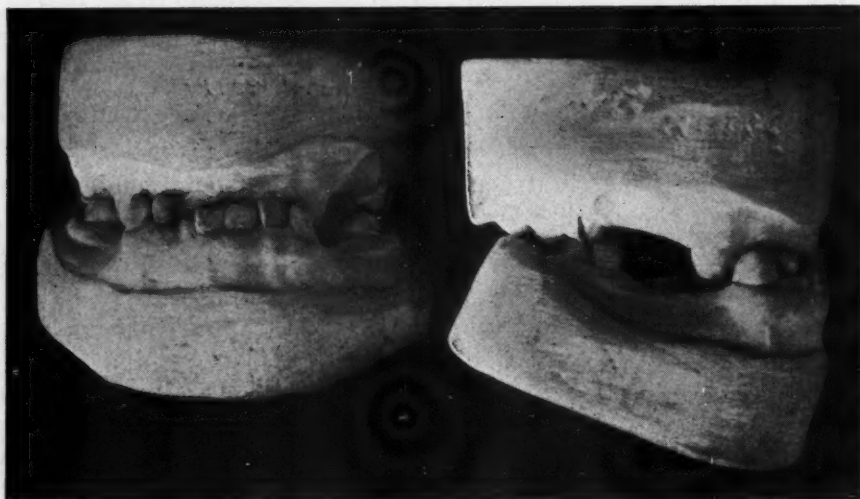


Fig. 1.

Mr. Harold Chapman said the case was a very interesting one and it would appear that there was a question of heredity involved, and one would be inclined to put it as a Class III class. The four permanent molars seemed to be in normal occlusion, but that might be only relative, on account of unequal medial movement due to the early loss of the deciduous molars. It is conceivable that they might have moved equally, so that the case might belong to Class I. It was rather difficult without very careful examination to decide, but whichever class it was it seemed to him that the appearance of the boy when he was 10 or 15 years older would be considerably marred if the condition were perpetuated. He would be inclined to undertake treatment to correct it, certainly when the permanent incisors were erupting in the upper jaw, if not at the present time. He had only recently seen a

\*Read before the British Society for the Study of Orthodontics, October 3, 1921.

similar case but rather older, with regard to which the parents were not willing to have anything done at all if it was only a question of improving the boy's appearance, although if it was a question of health they were willing to have treatment undertaken. While he could not assure them that it was detrimental to health, he felt sure that in ten years' time it would be detrimental to the boy's appearance, and the same applied to Mr. Steadman's case.

Mr. Steadman said the boy's appearance at the present moment was distinctly good and he was not at all sure that he agreed with Mr. Chapman that in underhung cases the appearance was necessarily bad. He had seen plenty of underhung people with faces quite good. It looked worse in girls than in boys. The boy he had referred to did not now show that he had an underhung bite at all.

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## TREATMENT OF CASES IN WHICH THE BITE IS TOO CLOSE\*

BY W. WARWICK JAMES, O.B.E., F.R.C.S., L.D.S.

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THIS paper is the outcome of a consultation with one of our members in which he advised extraction of premolars whilst I urged retention. There were many reasons in support of his argument—neither patient nor parents were likely to be helpful with the treatment, the second molars were presenting, and the boy went away to school, rendering regular attention very difficult. During our discussion I realized that I had adopted a new line of procedure which had as a base the old bite-plate, but with a marked modification. I therefore promised to bring the subject before this Society.

Two special features of my method of treatment need to be emphasized—one, that the molars are permitted to rise (more correctly develop) until the bite is propped open; the other, that treatment be undertaken at as early an age as possible.

Time does not allow me to discuss the many views explaining the changes during development of the jaws, whether normal or abnormal, but I would like to give you some of the steps in my own reasoning. As a student in the 'nineties I was taught that in the majority of cases the only effective method of treatment of cases of irregularity of the teeth was by extraction. Expansion of the maxillary arch by means of the Coffin spring was attempted occasionally, but with extraordinarily little success. Fixed appliances (then recently introduced by Dr. Angle) were much discussed, but regarded as too complex for hospital patients except for the purposes of teaching. In one case, which lived in my memory, a Coffin expansion plate was used capping the premolars; directions were given to the patient to stretch the spring daily. She was prevented from returning to the hospital for six months,

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\*Read before the British Society for the Study of Orthodontics, October 3, 1921.

but when she did so, not only had the arch expanded, but the malocclusion was corrected. Inadvertently my present method had been practiced.

As the result of considerable experience in private practice, and as dental surgeon at two hospitals, it seemed possible to correct malocclusion in two planes (lateral and antero-posterior), but the third (vertical) seemed too difficult, as I stated in a paper read at the International Medical Congress, 1913,\* from which I would like to make a quotation as expressing my views at that time:

"The succession of changes in the process of development of the jaws during the period under discussion comprises growths of the bones and eruption of the permanent teeth with loss of those of the temporary series.

"The development of the bones is such that the additional space required for the permanent teeth is supplied, growth takes place in several directions, but the exact changes are not definitely known. It seems possible that the

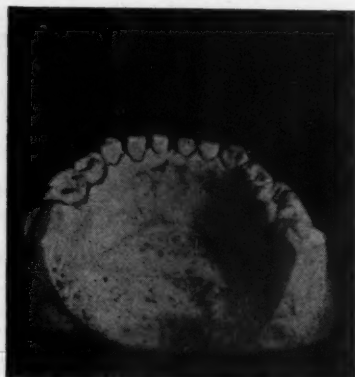


Fig. 1.—Model of the mandible of a boy aged 5, showing spacing of the incisors which have undergone attrition from edge to edge occlusion.



Fig. 2.—Models showing the advanced mandible and attrition of incisors. The first molars are about to erupt and the tissues over them are seen to be in occlusion.

presence of the teeth may have a special influence; interstitial growth has been assumed to take place in the mandible, although it is most difficult to conceive.

"Prior to and during the period of eruption of the permanent teeth the development of the jaws can be observed. The dental arches increase in size, the incisor teeth of the temporary dentition become spaced; the jaws in the region of the temporary molars are wider, as has been shown by measurement in a few cases; and the jaws show an increase in length in the antero-posterior direction in order to allow the first permanent molar to come into position. A change which, in the opinion of the writer, is of great importance consists of an alteration in the relationship of the mandible to the maxillæ. Previous to the eruption of the first permanent molars the mandible appears to develop in such a manner that the incisors no longer occlude posteriorly

\*One of the papers read before the joint sections of Hygiene and Preventive Medicine and Stomatology, opening a discussion on "The Supervision of the Health of Children between Infancy and School Age."



to those of the maxillæ, but assume a more or less edge-to-edge occlusion. The marked attrition of the temporary incisors is explained by this change, and is an indication whether it is occurring or not. The normal occlusion of the first permanent molars is permitted by this change; but if it does not take place the mandibular teeth will probably assume a postnormal relationship, as the second temporary molars will still have their posterior surfaces in almost the same vertical plane. The establishment of this view is difficult, as the movements of the mandible are so free in a child, a very wide range being possible. Models show the edge-to-edge occlusion is probable, but also that other positions are possible. It is sufficient to examine the mouths of children to be sure that this edge-to-edge occlusion occurs. It is my opinion that a case calls for careful consideration if the attrition marks on the temporary incisors are not definitely seen at the age of  $5\frac{1}{2}$  years.

"Normally the teeth should stand upon well-formed alveolar processes;



Fig. 3.

Fig. 4.

Fig. 3.—Models of a boy aged 2 years 5 months, showing postnormal position, with mandibular incisors completely hidden and impinging upon the gum of the maxillae. The second temporary molars, particularly those of the mandible, are imperfectly erupted.

Fig. 4.—Models of a boy 1 year, 7 months later than Fig. 3, showing the second temporary molars have been permitted to erupt and the mandible advanced, bringing the incisors into almost correct occlusion, the changed relationship of the temporary canines almost being noticeable.

too little attention has been directed to imperfect development in a vertical direction, probably because the treatment of the condition appears almost hopeless. This condition is only too common, and is associated with recognized imperfections in the development of the jaws.

"Some of the causes of imperfect development of the dental arches are known, but our present knowledge cannot be regarded as other than vague. That nasal obstruction is a most potent factor is certain; that loss of temporary teeth at an early age is a cause of much importance has long been recognized, although in some cases ill-effects do not result; of the deformities caused in infancy, those produced by habits constitute a larger group than has been thought; the general development of the child may be impaired by ill-health, by insufficient, or poor food, which may have a local effect as

in the case of rickets. Local affections also may exercise a marked influence.

"The interest which is now being taken in the deviations from normal development of the temporary dentition should be productive of a far greater knowledge than we now possess of the normal changes in the jaws. Until quite recently dental surgeons did not attach much importance to the stages prior to the eruption of the permanent teeth."

Later in the same paper, in reference to cases of postnormal occlusion, I said:

"Where the mouth is constantly open the muscles are at a disadvantage

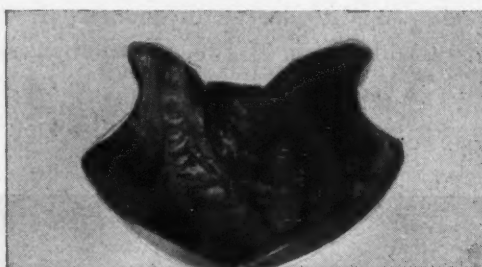


Fig. 5.—Plate used in case shown, Figs. 3 and 4. It was worn constantly night and day and the occlusion with the plate in position is such that the forward position of the mandible is the only efficient one that can be assumed during mastication. Those having care of the child constantly directed him to keep the lips closed.

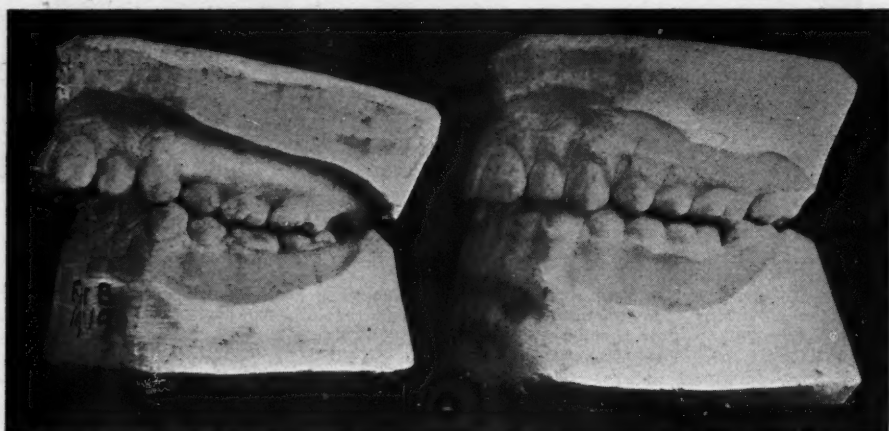


Fig. 6.

Fig. 7.

Fig. 6.—Models of a girl aged 13 with marked postnormal occlusion. The protrusion of the maxillary incisors was most unsightly, while the backward position of the mandible completely spoiled the balance of the face.

Fig. 7.—Models of case shown in Fig. 6 at 17 years. The molars have been allowed to erupt and the mandible advanced. The bite-plate was similar to the one shown in Fig. 10, the maxillary premolars and temporary molars were capped, "raising" the bite, while an inclined plane upon which the mandibular incisors impinged, compelled the forward position to be assumed. The narrow maxillary arch was expanded by means of the jack screw (Fig. 11), and as the width of the arch increased, new plates had to be made or a new jack screw inserted. The patient was directed to cease turning the screw when the halves of the plate began to work loose, but to continue wearing the plate until she could be seen; in this way some weeks' interval can be tided over when the patient is at school.

A plate as shown in Fig. 17 was used as a retention plate.

in supporting the mandible and the structures attached to it below. The weight of the pharynx and larynx constantly tends to displace the mandible in a downward and backward direction. In mouth-breathers where the jaws

are not occluded this force is sufficient to hamper advancement, or may actually cause backward displacement of the mandible. This view is introduced as it partly accounts, I believe, for the impaired respiration in mouth-breathers, the backward displacement of the tissues causing some obstruction. It is well demonstrated in patients under an anæsthetic, particularly in a sitting position, for if the mandible be pulled forward respiration is markedly free, while backward displacement of the mandible with the mouth open causes marked obstruction. In the dead subject, when the muscles are quite passive, the mandible from the mere weight of the structures attached assumes a posterior position. A child whose mandible had assumed a postnormal position (associated with tongue-sucking) was advanced with such marked benefit to health that the father, a medical man, commented upon it. The greater freedom of respiration seemed to be the only explanation. The



Fig. 8.

Fig. 9.

Fig. 8.—Models of a girl aged 8, showing the imperfectly erupted mandibular molars, which is more marked than in those of the maxillae, as is usually the case, although all are affected.

Fig. 9.—Models of case shown in Fig. 8. Patient is now aged 11 and still under treatment, the bite-plate being worn; the open bite due to the more fully erupted molars which are in occlusion when the bite-plate is in position. The second premolars have been freed and are being allowed to erupt. The protrusion of the maxillary incisors is being corrected by the use of rubber dam at nights (Fig. 16). The mandibular incisors bite upon the vulcanite of the palate plate, which has been filed behind the maxillary incisors at the points which would prevent their retraction.

dental arches were well developed, and there was no nasal obstruction. It has constantly been stated that imperfect aeration of the blood is a result of nasal obstruction and the view expressed above may be the true explanation, as apart from this there does not seem to be any reason why air should not enter as freely through the mouth as the nose."

I would also like to quote from another paper in which my views affect the question under discussion. In 1909 I wrote a paper upon the eruption of the teeth.\* Later in a paper written with Mr. A. T. Pitts† upon the dates

\*"A Preliminary Note on the Eruption of the Teeth." A paper read before the Odontological Section of the Royal Society of Medicine, 1909.

†"Some Notes on the Dates of Eruption in 4,850 Children under Twelve." Paper read before the Odontological Section of the Royal Society of Medicine, February, 1912.



of eruption of the teeth, the views expressed in the former paper were summarized as follows:

"A completely erupted tooth presents the following characteristics: the crown of the tooth projects so that all the enamel is exposed except that portion covered by the free margin of the muco-periosteum (gum). The root of the tooth is firmly planted in the alveolus, which should be on a level with the neck of the tooth. The periodontal membrane, is completely developed. The gum is firmly bound down to the bone, presenting a thin, even margin in close contact with the tooth immediately beyond its continuation with the periodontal membrane.

"The changes occurring during the period between the earliest state, when the tooth is buried deeply in the tissues, and that of complete eruption, need to be considered. Much discussion has taken place concerning the nature of these changes. It would appear to us that there are two distinct factors bringing about this alteration:

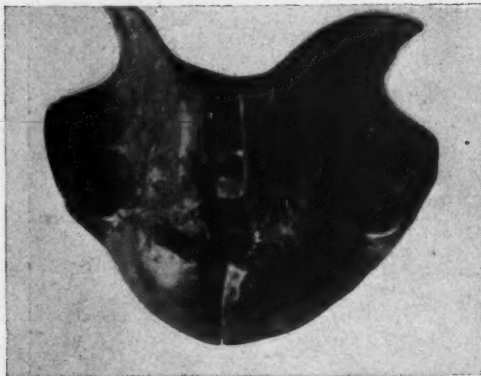


Fig. 10.

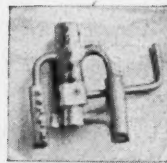


Fig. 11.

Fig. 10.—Vulcanite bite-plate, showing the capping of the temporary molars or premolars, and the plate divided for expansion by means of the jack screw. Difficulty in keeping the plate in position is met with occasionally; the necks of the teeth should not be touched, but the hollow for the cusps may be increased by drilling out the vulcanite or by placing a thin layer of metal (patten lead) over them before vulcanizing.

Fig. 11.—Badcock jack screw with second guide added. The plate is rendered much stronger and steadier by adding a second guide which should be stronger than the one made with the screw part.

"(1) A process of advancement of the tooth in the tissues; this is generally recognized.

"(2) A process of denudation by absorption of the tissues overlying and surrounding the tooth.

"With regard to the first factor, we are of the opinion that the point of eruption is determined by the presence of the epithelial columns connecting the oral epithelium with that lining the tooth-follicle. The advancement of the tooth is partly due to unequal rates of growth between the various tissues surrounding the tooth. We think it probable that the elongation of the root plays some part in advancing the tooth as represented in the following diagram. (An illustration was introduced here representing a tooth situated close to the lower border of the mandible.)

"This is supposed to represent a lower incisor; we know growth occurs

at the point marked with an arrow. As the crown is calcified it must either advance or the tissues below must be replaced. It is impossible to imagine, when we consider the length of the root, that concomitant growth of the jaw takes place to the same extent; and if x-rays of the jaw—*e.g.*, those of Symington and Rankin—be examined, it will be seen that the base of the tooth where the root is going to be formed is so situated that it cannot be elongated in a downward direction. Another factor in the different rates of growth will appear to be the activity of the immediately supporting tissue which may be regarded as carrying the tooth to its final position, a view supported by other observers.

"So far, we have considered the unequal growth of tissue in a vertical plane only, but concurrently with this, unequal growth also occurs in a horizontal plane. Sections made by one of us show that the epithelial column,



Fig. 12.

Fig. 13.

Fig. 12.—Models of a boy aged 11½ with postnormal occlusion and the mandibular incisors impinging upon the gingival margin immediately behind the maxillary incisors. The bite-plate was worn continuously in spite of several teeth having been filled, no new carious cavities arising. The plate was scrubbed twice daily with a nailbrush and swilled under the tap after each meal; these being the usual directions given to the patients.

Fig. 13.—Models of case shown in Fig. 12, 14 months later. The case is still under treatment. The occlusion has been altered and the maxillary arch expanded by the method usually adopted. A plate similar to that shown in Fig 17 is being worn and rubber dam used at night. The boy is away at school and can be seen only in the holidays, as is the case with many of these patients. Some patients have been seen once during the term when the expansion screw has become too loose for the plate to be worn with safety.

connecting the oral epithelium with the follicle, undergoes degeneration centrally, and proliferation of the deeper cells of the oral epithelium takes place. With this change an unfolding occurs in the upper part, thus exposing a lower portion which in its turn undergoes a similar change. This reduces the depth of the tissue overlying the tooth, which is therefore passive so far as the change is concerned. The process may be compared to the opening of a book, the hinged portion being advanced *pari passu* with the separation of

the pages of the volume until it comes to occupy the same level as the free edges.

"The second point that we wish to make is the process of denudation as a factor in exposing the teeth. This factor plays an important part in the final eruption of all teeth, coming into play earlier in some cases than others. The tooth which best illustrates the process is perhaps the first mandibular molar. If the first molars be examined in their earliest stage of eruption, it will be seen, in the majority of cases, that although only just piercing the gum, they are in partial occlusion. There still remain ways by which room for the advancement of the tooth is possible. This space could be obtained by a closer adaptation of the occlusal surfaces; by a lengthening of the ramus of the jaw and by an advancement of the mandible: we believe all these do occur. The last factor, though not yet established is, in our opinion, of importance. Yet we do not think these factors of themselves sufficient to account for the complete eruption of the teeth by advancement, and we

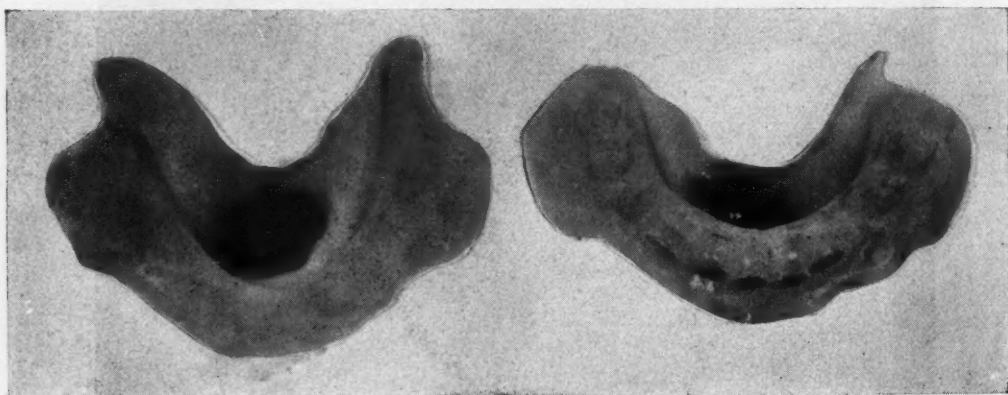


Fig. 14.

Fig. 15.

Fig. 14.—Wax make-up on plaster model, capping the temporary molar or premolars [in some cases, particularly young children, the temporary canines or even the incisors (see Fig. 5.)], with an inclined plane for the mandibular incisors to impinge upon while the first permanent molars are left free (the second temporary molars in early cases).

Fig. 15.—Wax as in Fig. 14 upon which the patient has been allowed to bite. The redundant wax in front of the marks of the incisors would hide the maxillary incisors if the wax were upon the model.

The correct bite is best secured by obtaining an edge to edge occlusion of the incisors and allowing the mandible to slide backwards until the correct position is obtained. It may be necessary to add wax to the incisors inclined plane which must be so arranged that efficient mastication is only possible in the forward position.

are of the opinion that the explanation must be sought for in the denudation of the tooth by absorption of the tissues overlying it, a change which we regard as being mainly due to the functional stimulus of mastication.

"It is probable that everyone will agree that a tooth which has already perforated the gum is further exposed by the absorption of the tags of gum overlying it. We would like to point out that if this process be continued until the loose flaps of gum are removed down to the neck of the tooth—leaving the gum closely attached to the periodontal membrane, with its free margin protected by the bulge of the tooth above it—the state of complete eruption is reached. The difficulty of determining the conclusion of this



latter stage is considerable owing to the long period of time occupied even in healthy mouths. In unhealthy mouths, as in the case of the incisors in mouth breathers and other conditions of impaired function, the change is much prolonged. Some cases, indeed, would appear to remain in a state of incomplete eruption almost indefinitely. This is particularly so where a condition of so-called 'pyorrhœa' becomes established, as this affection is undoubtedly liable to occur in mouths where the absorption is incomplete."

The discussion upon this paper should give rise to criticism of the views expressed in these quotations, particularly as far as they affect the line of treatment I am advocating for those cases in which vertical development is deficient and a too close bite results. A mandible in the postnormal position causes the occlusion of the molars to occur prior to their full vertical development. This is well demonstrated by advancing the mandible to the correct position, when a considerable space is present between the occlusal surfaces of the respective molars of the mandible and maxillæ. The stage of eruption

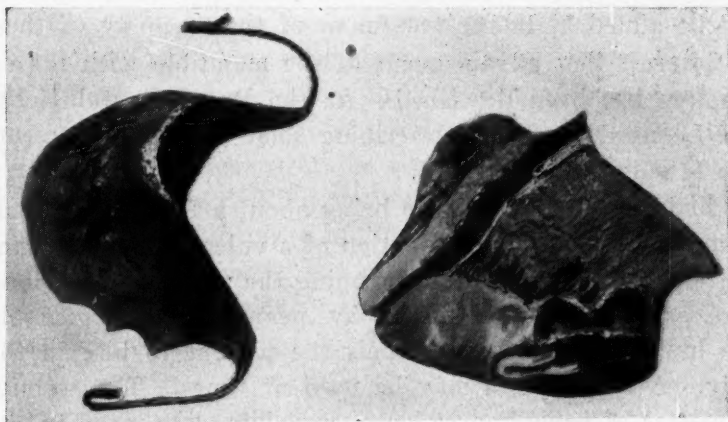


Fig. 17.

Fig. 16.

Fig. 16.—Shows a bite-plate cut for expansion but to show particularly the hook inserted in the vulcanite of the wing overlapping the premolars. This type of hook has been found to be the most suitable form for holding the rubber dam which is stretched across the front teeth of the maxillæ at night. The smooth surface shows where the plate has been cut away to allow the incisors to be retracted, whilst sufficient vulcanite has been left to occlude with the mandibular incisors, which are prevented from rising.

Fig. 17.—Shows a retention plate which maintains the arch. The mandibular teeth being unable to occlude in any other than the forward position, in due course establish occlusion in this position, the elevated molars being the chief factors in effecting this change. The hooks for retracting the incisors are here seen soldered to the wires which support the plate.

of the molars during which the tooth with the surrounding tissues approaches those of the opposite jaw, and which should permit of full development, is restricted to the limited vertical space resulting from this postnormal position. The denudation stage of eruption leads to exposure of the crowns of the teeth, whilst complete eruption in most cases never occurs. Tags of gum may remain upon the teeth for long periods, caries is frequent, mainly because food collects easily, but also because cleansing by mastication, with the tongue, or by artificial means is difficult and imperfect.

It will be generally admitted that postnormal occlusion and mouth breathing are almost constantly associated, but it is well to emphasize that there

are some who keep their lips apart although they do not breathe through the mouth. The important factor is that the jaws are apart during the greater part of the twenty-four hours.

The importance of heredity in these cases must not be overlooked, although it is difficult to do more than note that similar conditions are found without doubt in parents and children, and that many in one family may be affected; in spite of this, a common factor may be the cause.

Examination of patients, or of models in which the bite is too close, shows the crowns of the molars imperfectly exposed, whilst the mandibular incisors have an elevated appearance and those of the maxillæ frequently protrude. If the occlusion of the jaws be examined, the mandibular molars and canines are nearly always postnormal, whilst the incisors are generally in contact with the palate. If the mandible is advanced so that the incisors bite as near as possible into the normal position, a considerable gap exists between the teeth posterior to the canines. The establishment of the mandible in this position, with alteration of the relationship of the teeth, is what should be aimed at in the treatment of the majority of these cases.

It is of interest that advancement of the mandible with the eruption of the third molars has been described. At the Royal Dental Hospital, I remember Mr. Leonard Matheson describing some cases, one a member of his own family, I believe.

The method adopted in order to bring about a fuller development in the molar region, consists of the introduction of a vulcanite plate, which removes the bite entirely from the molars by capping the maxillary temporary molars or premolars, as the case may be, and by means of an inclined plane which engages the lower incisors and compels the patient to bite in the forward position only. A lower plate may be used at times. The technical details comprise a plaster of paris impression, a wax bite-plate made to cap the temporary molars or premolars, and with an inclined plane for the incisors to bite upon. Previous to taking this bite, the patient must be shown the exact position in which the teeth are to be placed together. This is best done by asking them to bite the front teeth together and then to slide the lower incisors inside the upper ones until the corrected position is obtained. When the wax bite-plate is introduced, the correct position can be obtained without any difficulty, although one or two attempts may be needed in some cases. The wax, trimmed up and corrected for vulcanizing, may be tried again, but usually it is unnecessary. Wax may be added in order to depress one or two of the mandibular incisors which usually need correction, and grooves cut on the inclined plane in such a manner that a lower canine may be directed forwards and outwards. In the majority of cases a jack screw is inserted, the form introduced by Mr. Badecock being by far the most useful; a second guide should be added in order to strengthen the plate. This is particularly necessary when the halves of the plate become widely separated. (The Dental Manufacturing Company are making a jack screw after this pattern.)

The particular details in each case can be readily determined by the

operator, the variation depending upon the type of case and the age of the patient. The earlier the correction can be effected the better for the subsequent development of the jaws, as the normal development is more closely approximated.

Much nonsense has been talked about the impossibility of effecting changes in the temporo-mandibular articulation, as if the adult joint existed in the infant. The development of the joint must be influenced if the occlusion be altered in infancy, but the later in life the attempt is made to correct a postnormal occlusion, the more necessary is it to adapt the procedure to the established conditions.

Although it is not my intention to deal with the subsequent treatment, I have found one procedure exceedingly valuable. When the condition of open bite has been established in the incisor region, if the teeth are spaced, or in a patient in which the extraction of the first premolars has been necessary, an arrangement is made by means of which rubber dam can be used at night, stretched from hooks attached to wires on the first molars of the retention plate, or even, at an earlier stage, from the vulcanite overlapping either the temporary molars or premolars (see Figs. 16 and 17).

A slight difficulty occurs at times in keeping the plate in position, particularly when the temporary molars are shallow; assistance is obtained by relieving the plate over the cusps of the teeth either by a thin layer of metal prior to vulcanizing or by drilling the vulcanite away afterwards. At times a metal crib can be used in place of the overlap of vulcanite on the second temporary molars. Any particular case can usually be met by a special device which will suggest itself to the dental surgeon. The notes attached to the illustrations should make the chief points clear.

#### DISCUSSION

*The President* said Mr. James' paper was an interesting one on a subject which was constantly presenting itself in the treatment of orthodontic cases, and, as Mr. James said, the condition was one which was only associated with postnormal occlusion, especially in those who were mouth breathers.

*Dr. Sim Wallace* said he was fully in agreement with almost all that Mr. Warwick James had said, and he believed that in one of his own prehistoric papers he spoke of the muscles pulling back the jaw and preventing the proper growth. He did not exactly like the way Mr. Warwick James put the matter when he said that the mandible was displaced backwards, because he did not think it was displaced backwards; it was the action of the muscles pulling it backwards which prevented it growing forward. The growth of bone at the posterior border of the ascending ramus of the jaw would grow forward. In some things, however, he was not quite prehistoric, and he had brought forward another little thing which he thought added to the knowledge of the etiology of the subject; it was with regard to the occlusion of the incisors at a very early age. Mr. Warwick James had shown that the development of the bone might be stimulated by a continual bringing forward of the lower jaw by a vulcanite plate, but there was another way whereby the growth forward of the jaw could be stimulated, and that was by the constant apposition of the lower incisors with the upper incisors in the act of gnawing. Although Mr. Warwick James said the deviation could be detected at 2 years of age or even earlier, he himself believed that in a proper case it was visible practically immediately the teeth were erupted. In a very early case he had watched the incisors coming up into position, and instead of the child gnawing



he held his mouth open and by the time the incisors had erupted the bite was close and the lower incisors were up against the gum. The first thing that brought about normal occlusion, he considered, was the constant apposition of throwing forward of the lower jaw to gnaw.

*Mr. Pollitt*, referring to the case which Mr. Warwick James had treated at 2 years of age, asked whether the treatment would be the same in the case of a normal mouth breather and also whether the child wore the plate at night and whether there was any difficulty with regard to the wearing of the plate, difficulty especially in eating.

*Mr. Highton* asked whether Mr. Warwick James used the expansion screw in conjunction with the vulcanite plate and, if so, whether there was not a danger of expansion in the upper molar region.

*Mr. Pitts* said that, interesting as were the results which had been brought forward, he thought the views concerning the etiology of the condition were even more interesting. Mr. James had quoted some earlier papers in which he mentioned that certain changes occurred in the jaws of children and on that based certain inferences. He remembered at that time being closely associated with him at the Hospital for Sick Children, and the matter being very frequently pointed out, and also remembered Mr. James speaking of the spreading of the incisor teeth and also of the attrition and change in the relationship of the mandible to the maxilla. He had often verified these observations since and was more than ever convinced that they were correct and had not received the attention of the dental world that they deserved, but he was not at all sure now that he was prepared to place the same inference on those observations as he did when he saw the cases with Mr. James. It was quite true that in the majority of children attrition occurred, and he himself regarded that as being a sign of normal growth, together with spacing, but with regard to the movement forward of the mandible he would like to ask whether it was really so. It was quite true that if a child of five, in whom attrition was well marked, so that most of the overlapping of the upper incisors had been obliterated, were asked to bite, the bite would nearly always be edge to edge, and there would be in that case a perfectly good molar occlusion, but by perseverance one could always get the child to close back into the original bite—using the term “bite” as indicating a static anatomical relationship of the lower jaw to the upper jaw, which occurred in mastication and which was practically, although not quite, the most posterior position which the mandible was capable of assuming. That normal bite, even although the attrition was well marked, could be still assumed by the child. The edge to edge bite was a functional condition due to the forward movement of the jaw in mastication. He did not think that actually there had been an alteration in the anatomical relationship of the mandible to the maxilla, as Mr. James would seem to suggest. With regard to eruption, he agreed fully with the paper Mr. James had quoted, but found it difficult to understand how one could get an insufficient vertical development of the molar teeth and yet have complete denudation occurring. It would appear, according to Mr. James, that there was an imperfect eruption of the teeth with regard to the bone, although denudation had gone on. He himself had seen many cases where denudation remained imperfect, as he believed it did nearly always in the case of the third molar, but he did not see how it was possible to get complete denudation and yet still have an imperfect relationship with regard to the bone. He would like to know whether Mr. James thought there had been an alteration in the relation of the condyle to the glenoid fossa. Did the relationship remain unaltered or did Mr. James think that the patient had assumed a functional bite of convenience, the anatomical bite still remaining and being assumed on occasion? He thought it was rather important, in connection with results which were obtained to determine really what had happened.

*Mr. Friel* said it had occurred to him that in two cases he had treated by jumping the bite he had done exactly what Mr. Pitts said, namely, he had got two bites, a bite where the child could bite forward with a beautiful result and a bite with a frightful result. In *Tomes' Anatomy*, the second edition, there was a jaw of the skull of a man who had a

few upper incisors on one side and a few lower incisors in the lower jaw on the other side, and to get those few teeth to approximate he had to shift the jaw to the other side. He had a flat glenoid fossa. Possibly that was what he himself had produced and possibly what might be produced in some other cases of jumping the bite. He thought in treatment it was absolutely essential that a plate should be worn continuously before the proper condition could be obtained, and he would much prefer to fix a biting plane that was attached to the tooth and that the child should continuously bite in the one position shown in the model. The change that was going to occur was very large, and he thought it would have to be a very continuous bite if it was going to occur at all. Either the ascending ramus was going to change or the neck of the condyle or the bone that surrounded the joint. The joint itself was not likely to change. He had brought a model showing the biting plane used by Dr. Johnson in Boston. It was attached to the molars. Dr. Johnson made two upper molar bands and soldered two horizontal lingual tubes to the bands and fixed a longitudinal arch. To that lingual arch was soldered a small oval piece of wire with a flat surface, and the lower teeth had to bite on that plane. That allowed much more freedom than a biting plate; it did not interfere anything like so much with function and was much more constant. His great objection to the biting plate was that sometimes they were worn and sometimes they were not. With regard to the etiology, in his own practice the worst cases of close bites were not mouth breathers, and he thought it was quite true that they were never mouth breathers. He had two models of children of 4 years of age. The parents said that they were not mouth breathers, but they had very close bites. It was true that in the majority of cases there was distal relation of the jaws, and in those two cases the distal relation was on one side only. In actual treatment there was a difference between cases of mouth breathers and cases not produced by mouth breathing. In the latter cases one might obtain a result, but it was much more difficult to maintain it. In the case of mouth breathers the result could be obtained and maintained. Neither of the cases he showed had any protrusion, and they were not mouth breathers. In cases of mouth breathers he had found that the lip pressure was very reduced. He had been using an instrument by which he could measure the pressure of the lips, and in case of mouth breathers it was very much reduced, and in both of the children he had spoken of, the muscular pressure of the lips was quite good, almost a pound. In children who were mouth breathers it was very much less.

Mr. J. H. Badcock said that a great many years ago he used plates something like those Mr. James had described, with the inclined plane. He always used an inclined plane, with a metal surface, so that the teeth could slide upon it more easily. He found, as Mr. Friel had said, that two bites were obtained, and he came to the conclusion that the reason was that the biting plate only acted intermittently. It was not a question of leaving the plates out, which would make matters all the worse. If a plate were used like the one designed by Dr. Johnson, it was only effective while the teeth were clenched, which is seldom and for a short time only, so that an apparatus of that type was really acting only for a comparatively short period, the jaw working now in the forward now in the backward position. If one were aiming at an alteration in the glenoid fossa, some apparatus must be used which would keep the condyle in its forward position all the time, because if it were always sliding forwards and backwards a stable result could not be expected. Therefore he gave the method up some time ago. After conversation with Mr. James, he was stimulated to try it again, but he thought his results were much the same.

Mr. Friel said the apparatus of Dr. Johnson was only used for raising the bite, not as an inclined plane. It was not for bringing the jaw forward.

Mr. Keag thanked Mr. Warwick James for his paper and confessed that when he read the title he was greatly cheered, because close bite cases seemed to present an insoluble problem. When he read the summary of the paper he was disappointed, because it seemed to him that it was just a particular phase of close bite. As a matter of terminology he would not ordinarily have used the term for such cases, but one got into the habit of using Angle's

terminology, and he thought he would call it a case of Class II. The essential feature of the cases presented by Mr. James was hardly a close bite but rather the postnormal occlusion of the lower teeth. His own preference in the treatment of such cases was for the Angle apparatus with modification—instead of the buccal arch in the lower or lingual arch. The result appeared to be the same eventually, although got by different means. The effect of the bite-plate and the Angle apparatus was two-fold. There was probably a reduction in length of the lower incisors as well as an elongation of the molars. Certainly there was a great deal of difference in the curve of the lower arch, which he thought was not entirely accounted for by the further eruption of the molars, but was accounted for in the bite-plate by the extra pressure on the lower incisors as well as the further eruption of the molars, and in the Angle apparatus the use of the lingual arch, the pull of the elastics on the lower molars transmitted through the lingual arch, was to depress the lower incisors and also to raise the lower molars. In view of the doubt which has been expressed as to the permanence of the results, he thought the Angle apparatus was preferable. By that means the bite was not jumped at all and the progress between postnormal occlusion and normal occlusion was steady. At the intermediate stage the bite was in between. It was only when the treatment had reached its conclusion that the normal bite, the bite which the child used in the great majority of occlusions, was the bite in which the incisors and molars came into what was regarded as normal occlusion. There was no doubt about the permanence of the normal bite when it was reached in that fashion with an Angle apparatus, and there certainly seemed to be some doubt of it when reached by the method of the bite-plate.

*Mr. Housden* said he noticed in one of Mr. James' models that there was a lower incisor missing in the front, and he would like to know whether that was due to regulating.

*Mr. Samuel* said there were several points in the paper which had puzzled him. As he understood Mr. James, one of the causes of what was usually called Angle Class II was a too close bite and it was said that that was most frequently found in mouth breathers. With regard to the question of treatment, he understood that one of the alternative treatments of Class II, Division I, cases, as given in most of the textbooks, was treatment by an inclined plane and opening the bite.

*Mr. Sidney Spokes* said he had been very interested not only in the paper but in the discussion, and had been also a little perplexed. He had tried to follow the various speakers in the different ways in which they diverged from Mr. James' paper, and they seemed to go very far afield. If the paper was taken without any of the frills which had been added to it, it was quite a simple thing. There was a bite with the lower incisors biting on the upper gum: leave the etiology out altogether and have regard simply to the treatment. A very old method of treatment was to raise the bite and give the molars an opportunity of rising, and he had seen it done over and over again. He quite agreed with one speaker that while the molars were coming up the lower incisors would be pushed down, but even that was not a disadvantage. He would content himself by saying that he could accept what Mr. James had put forward in the first place.

*Mr. F. B. Bull* said the question was whether the bite, when the case was finished, was a stable one. On one occasion when a child was asked to occlude, the bite appeared as shown in the finished model, and at other times, when the child was not being watched, there was a tendency for the jaw to be drawn back again. If the patient's bite was well forward, and that was not really the true bite, the muscles after a time would have a tendency to get tired, and if the child was asked whether those muscles ever did have a tired feeling it would be almost a solution to the mystery. He did not know whether Mr. James or anyone who had treated cases in that fashion had ever asked their patients the question.

*Mr. Warwick James*, in reply to the discussion, said he had certainly aroused some interest, if nothing else. He had read a great deal of what Dr. Sim Wallace had written, and it was always well worth reading. It was surprising how much Dr. Sim Wallace had taught orthodontists. With regard to the backward displacement, he had said in that paper that it could be called a backward displacement, but was probably more correctly described as a



want of advancement, so that he should be in agreement with Dr. Sim Wallace there. He was sorry to claim to be the first person to regard the weight of the tissues upon the mandible as the factor which prevented that advancement, and he apologized for not having recognized that point in Dr. Sim Wallace's literature. Stimulation by gnawing was a point to which Dr. Sim Wallace attached great importance, and there was little doubt of its importance, but in these cases it was a fact that the jaws were apart rather than closed. The mandible was brought forward in order to gnaw. If the jaws were apart the weight of the tissues below acted upon it and tended to maintain it in a backward position. Mr. Pollitt had asked whether the plate was worn at night. The actual plate shown had no inclined plane upon it; it was used merely to open the bite to allow the temporary molars to rise. The child wore the plate night and day and during meals, and had no difficulty in using it; in fact, the child said he had the plate given to him because he was a good boy, and regretted very much giving it up. With regard to the use of the Badeock screw when capping the premolars, it was necessary to see that the expansion was not carried too far. He did not think it mattered a great deal if the teeth were a little overexpanded as long as they were not carried out far enough to lock outside those of the mandible. They would drop back quickly enough if given the opportunity. If expansion was unnecessary or only slight expansion was needed, a bite-plate alone could be put in and the molars allowed to rise. He was not dealing with the question of the correction of a general irregularity but merely talking of the use of a bite-plate in order to elevate the molars and get further development of them. It was quite true, as Mr. Pitts had said, that different bites could be assumed. It depended on the age of the patient. If the patient's joint was incomplete in development as when a commencement was made with a child of 2 years of age, the development of the temporo-mandibular joint could be influenced. Starting with a patient of 20 he had been able to raise the bite and get results.

If the maxillary arch was expanded and the molars allowed to develop, the mandibular arch could only occlude in the forward position and if the expansion were maintained the child would assume that position. All the teeth at first might not be occluding correctly but in due course they would do so if sufficient space was allowed for their development. It was necessary to maintain the maxillary arch, and in order to do that he let the children wear a vulcanite plate for several years, gradually dropping it, wearing it by night and not by day, or by day and not by night. It was necessary to maintain the position that had been attained, or the teeth went back, and that was why he thought the use of the inclined plane formerly failed. He did not think the capping of the premolars or temporary molars when an inclined plane was used formerly was done intentionally; he thought it was largely done by chance. By using an ordinary Coffin expansion plate in the case already described, the result was absolutely astounding. It was true that the mandible often had a great deal of movement if the patient was over 12 years of age when treatment was commenced, and that was why he urged that cases should be attempted at 2, 3 and 4 years of age, as soon as the temporary teeth were in position. It is quite possible that the eruption of the first permanent molars may become the ideal period to undertake treatment. He quite agreed with Dr. Sim Wallace that as soon as the temporary teeth were in position one could recognize the position that was going to be taken up, and he believed that treatment should then be attempted. With regard to Mr. Pitt's remarks on the subject of denudation and imperfect eruption, in his paper on eruption he pointed out that the tissues grew and that the teeth were carried with all the tissues into position, and that if a mouth was examined where the tissues would eventually be normal or even abnormal, the gum tissues were often in contact prior to eruption (see Fig. 2). The first permanent molars almost immediately they pierced the gum were very often actually in occlusion. He had seen cusps of opposing molars within a millimetre of one another at the time of actual eruption. In the process of eruption growth took place and carried the teeth with all the tissues upwards or downwards, as the case might be. Denudation continuing under such conditions would leave those teeth exposed, and if the occlusion occurred too early the teeth

would be left in a position of insufficient development. With regard to the wearing of the plate, he told the patients that if the plate was not worn he would not go on with the treatment; that if they would not wear the plate, it was not the slightest use going on. He found patients would wear the plates and continue to wear them. Occasionally there was a case where a child would not, and then if treatment had to be gone on with, a fixed appliance should be used. He used a fixed appliance in some of the cases after he had raised the bite, possibly using a fixed appliance in the mandible and a vulcanite plate to keep the position in the maxilla. With regard to Angle's apparatus, it was the difficulty he had with patients that led him to adopt the vulcanite plate. There was always the difficulty of dealing with children who were going away to school, and he found the method he had described an exceedingly simple one, and he believed it would not be long before a great many orthodontists were using it, on account of its great helpfulness. It saved a long period of time during which the relationship of the molars could be altered, and then other apparatus could be used that involved more time and care. With regard to Mr. Samuel's remarks, it was perfectly true that the inclined plane was mentioned in the textbooks, and many dental surgeons had used it, but he thought the rather prolonged use he had adopted was a modification of the method. He had had no intention of reading a paper on the subject until he was more or less urged to do so, feeling that it was an important modification that might be discussed by the Society. He did not know how far the muscles became tired. The thing was to provide a bite that a child could adopt. With a vulcanite plate such as he used for a child of 2, in eating its food it could only bite on the plate, and the position was actually assumed. He did not attempt really to jump the bite, because he did not think jumping the bite was the correct treatment. He simply raised the bite allowing development of the molars in a vertical direction. Some of the cases were so bad that the protrusion of the upper incisors could be very unsightly and difficult to deal with, and in those cases he always used a rubber dam at night with the plate that he used for fixing, so that the teeth could be pulled back quite quickly. Very often the occlusion was fixed and the bite was open anteriorly, and in such cases he had extracted the first premolars and gone on pulling the teeth back until they dropped down on the lower incisors. The modifications that could be adopted with this particular method were numerous. If the bite was propped open, the teeth were protruding, the length of the face was altered and the incisors were pulled back until they came back on to the lower incisors. It was a fairly simple method. In hospital practice such a plate could be worn and the teeth corrected in that manner.

## SPRING ATTACHMENTS—POSITIVE AND OTHERWISE

BY DR. A. C. GIFFORD, OSHKOSH, WISCONSIN

WE WERE taught not many years ago that we had a universal appliance in what was known as the Angle arch, or the plain labial wire; but we have perceived through contact with different men, that this is an age of invention or mechanical ingenuity. The appliances now used by some men in the practice of orthodontics possibly give one more opportunity for modification than in previous times. I am referring to the lingual appliance in particular.

Much has been written in the last few years upon the spring of wires of minute gauge for the movement of teeth; especially so since the advent of the lingual wire, both stationary and removable. It is not to give you many new ideas that I present this for your approval, but to emphasize the value of these small wires when attached in such a manner that the "Elastic Forces" are still intact in these springs.

The lingual wire has been in use for many years as a retainer, and it is being perfected into an active appliance these last few years. Some use it as a soldered or stationary appliance, others as a removable apparatus.

The soldered or stationary wire is expanded or stretched with a special pair of wire-stretching pliers made only for nineteen-gauge wire. The peculiarity of this wire is its desire to move all the teeth, when being stretched, unless the technic that is adapted to this work is skilfully followed. One wrongly placed pinch of the wire will do much harm. Unless a definite technic has been followed, a surprise is sometimes in store for the operator upon the return of the patient the next time.

The removable lingual wire is adjusted differently; the plan being to follow the line of deformity as near as possible and straighten the bends which will press on these teeth in malposition.

Appliances of early construction show how they used to move teeth with spring wires, but there was no definite plan as to just how much pressure was needed, or how much force was necessary to place certain teeth in the desired place without disturbing the process and surrounding tissues, including the pulp of the tooth which was to be moved. So much force can be applied through the pressure of spring wires that great harm can be done both to tooth pulp and supporting structures.

It is very essential that what spring has been lost in the soldering should again be returned to these small wires in the magnitude of its proportions. Consequently these wires must be bent upon themselves after heating, for I find that they do not have the elasticity after soldering that they are supposed to possess. In certain cases one must protect the wire from heat as much as possible.



There are great possibilities in this plan of moving teeth since we have the lingual wire with modifications, for it is possible to place attachments for tooth movement that will need no attention from the time they are placed until the tooth or teeth are in the position which we have planned they should be. This one factor makes spring wires a great favorite in my practice, especially when appliances are placed for patients who come from considerable distance. There is less adjusting and in fact the less you adjust or try to adjust these spring wires the more efficient the appliances will be, especially if the body wire is of the soldered or stationary type.

Each appliance must have a body wire, or a wire for attachment of springs, that is stable enough and large enough to take up all the action or reaction that may be put upon it by the draw, pull, or push of these springs; for if this is not the case our tooth attachments will suffer, and we have not only moved the tooth or teeth which we were trying to move, but our anchor-teeth as well. To place a spring upon smooth surfaces that are acclivous and declivous without some form of retention is not a good policy, for there will be that slipping or sliding of the spring to relax itself, particularly so if the spring be long. This retention may be on the body wire or on the teeth that have the pressure applied. There are many possibilities in the movement of teeth by this form of power.

When we consider this from an orthodontic sense it does not mean much, for the principles of nearly all appliances are that of spring wire, as there is in nearly all appliances this action that moves the tooth or teeth. In our plain labial wire, and the Angle pin and tube appliance, and the Ribbon arch, the spring is the principle of the force applied in these appliances to procure maximum efficiency. As near as I can explain, "spring" means "Elastic Power" in the sense in which I use it. We must use small springs in most cases. There are tooth movements however, that require a wire with considerable spring, especially if it is to be of extreme length. Therefore, the longer the spring wire the larger the size wire we must use.

What I have to present to you are cases in my practice that have been treated successfully with the appliances shown. I know there can be many modifications and alterations in these few cases that perhaps can be enlarged upon. I wish to impress upon you the use of the fine springs in preference to the heavy springs for they act better, and they continue to exert forces longer than heavy wire. Continuous light force or gentle elastic force is what is wanted for tooth movement, and adjustments will not have to be made as frequently.

There are numerous ways that springs may be attached to the body wire to move teeth. But many of the spring attachments will be valueless if they cannot be tightened correctly, and they, being always active, tend to destroy rather than correct. I have had many failures in trying to move teeth with springs for no other reason than that my principles were wrong in expecting each and every form of spring to move teeth.

When the force is applied correctly, one will be surprised at the remarkable results accomplished in a short time. A spring with a free end is not

a positive spring in my hands, for in the tightening of this form of spring I find it will not keep its place, and the free end will slide up or down, as the circumstances are in either upper or lower, and be a continuous source of trouble. The tongue seems to be continually looking for some obstacle to disturb.

In many instances, I find it very inconvenient, as well as impractical, to use a body-wire that follows the gingiva of the teeth. Sometimes there is the occlusion that interferes in this respect, and oftentimes the appliance interferes with the speech if placed at the necks of the teeth. If we wish to place

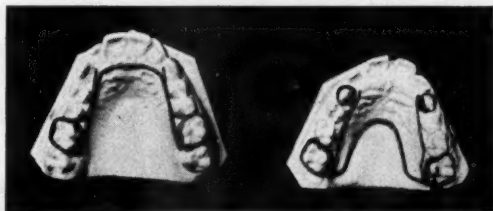


Fig. 1-B.

Fig. 1-A.

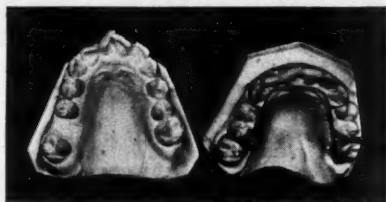


Fig. 2-A.

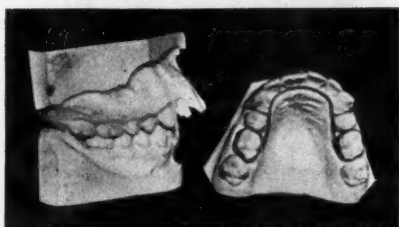


Fig. 2-B.

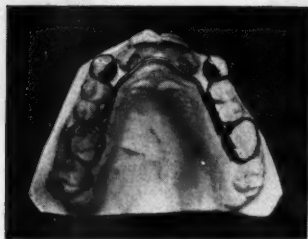


Fig. 3.

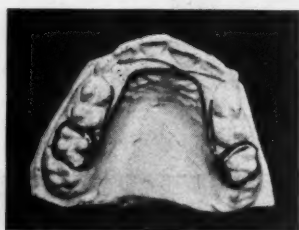
our appliances on the lingual aspect we must modify them according to conditions. Fig. 1 A will show my idea of such an appliance. It is a positive appliance inasmuch as the spring attachments are attached at both ends. The moving end is not necessarily soldered but may fit in under a wire or may enter a small tube one gauge larger than the diameter of the spring-wire used. Body-wire was 16-gauge, springs were 22-gauge. Fig. 1 B is an appliance made to perform the same duty as Fig. 1 A. This follows the line of the arch and does not have retention bands at the end of the spring wire. Body wire is 19-gauge, spring 22-gauge.

At this time I wish to call your attention to the curve or bent wire to the distal. The spring is soldered distally and bent upon itself to the mesial,

giving it more spring and a place for the tightening of said wire, which is done by a very slight bend to the lingual, at the cross, thereby bending the moving end labially.

The labial spring principle of the Hawley retainer has been used as an active appliance in my practice for some time. I find it a corrective appliance as well as a retaining appliance. My idea is that there is no better retainer than the appliance that is used to move the teeth. The spring can be applied as needed for the movement of teeth. These are shown in Fig. 2 *A*. The arch was expanded first, as is necessary in all these cases before this form of appliance was placed. Body wire was 19-gauge, labial spring 23-gauge positive spring.

Fig. 2 *B* is the same form of spring applied to a case where I thought



A.



B.

C.

Fig. 4.

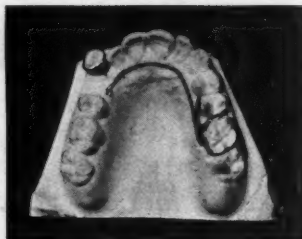


Fig. 5.



Fig. 6.

advisable to remove the first premolars. The first and second molars were used as anchorage, (this shows the retainer) and the body wire was placed only slightly to the lingual of the anterior teeth so as not to obstruct the speech, it being shortened occasionally. This form of spring is better used, I think, with a removable base-wire as it is easier to adjust, requiring less labor when shortening the body wire; wire same size as 2 *A*.

Fig. 3 is an appliance of heavy spring wire for the rapid widening of an arch where there is a marked nasal stenosis. Bands on molars and canines are fastened together by half-round wire (curved side to the teeth). A sixteen inside gauge open tubing, with the distal end closed is soldered to this wire connecting the teeth. A 16-gauge wire is fitted to this so it will spring and rest in these tubes. The 16-gauge wire cannot slide back if the distal end of the tube is closed. Considerable pressure was put upon the teeth which in one month's time showed a lateral movement of the canines and teeth distal



to them a little over one quarter of an inch without an adjustment. This is a positive appliance.

Fig. 4 shows what can be accomplished in a very short time with the appliance shown. These springs all were made on the loop principle or bent upon themselves, so as to get an adjustable spring which would give constant pressure. The tooth movement was remarkable, as the model "C" was made about ten weeks after the appliance was adjusted and with but two visits to the office. Bands with small wires soldered to the linguo-gingival surface were placed on the laterals so the anterior springs would not slide to the occlusal. A 19-gauge body wire, and 22-gauge springs were used.

Sometimes, due to certain mutilated conditions, we are required to remove a tooth that is labially placed in the position of another tooth. The case number 5 had a mandibular right lateral removed some years previous to the time they consulted me for the correction of the misplaced canine.

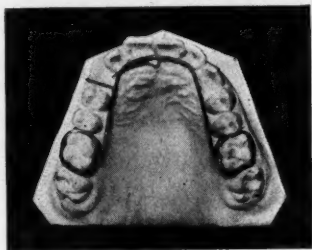


Fig. 7.



Fig. 8.



Fig. 9.

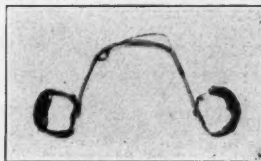


Fig. 10

I planned the appliance shown to give the most efficient services for a patient at a distal point from my office. After placing the appliance I saw the case but once until it was removed, and that only for observation. The appliance was not adjusted from the time it was placed until it was removed. Constant, positive spring pressure by a twenty-gauge wire placed the tooth where I planned it should be. Notice the stabilization of the molar anchorage. Spring wire of 20-gauge was used.

In cases such as Fig. 6 I find a very simple and efficient appliance such as is shown on the upper model. This is not very plain, due to it being a model made from an impression taken with the appliance in the mouth. The appliance was left as a retainer when the case was in normal occlusion. Body wire was 17-gauge, springs were 22-gauge.

Fig. 7 is a very ordinary spring appliance for the correction of the malalignment of the anterior teeth in the maxillary arch. A 19-gauge body wire and 23-gauge springs were used. Occasionally we are called upon to move

one tooth to facilitate placing an artificial restoration and in one of such cases I constructed the appliance shown in Fig. 8.

Another delicate appliance is shown in Fig. 9. This is to rotate the lateral and was the original appliance used on this case and it surprised me to have the tooth in its normal position when the patient returned after about six weeks' absence.

In the early part of this article I spoke of retaining the free end of the spring wire on the body wire. Fig. 10 shows an appliance which has the free end of the labial spring in a tube, one size larger than the spring, soldered to the body wire. The spring wire must be bent at such an angle that it will slide freely in this tube as the tube is at an angle and is not parallel with the long axis of the bent spring.

There are many places where we can use springs in orthodontics and I hope to have some suggestions from the readers to add to my many spring ideas.

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## REPORT OF CASES\*

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BY GEO. W. GRIEVE, D.D.S., TORONTO, CANADA

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**T**HERE is nothing unusual in the case I am about to present, but it serves admirably the purpose of illustrating the efficiency of the pin appliance, which was used on the maxillary teeth. The mandibular arch was corrected with the lingual wire. It is a neutroclusion case.

Fig. 1 shows the extreme overbite, considerable space between the maxillary first incisors, lack of eruption of the maxillary right second premolar and maxillary left canine; the latter, as may be seen, was about to erupt quite high up. The skiagraph showed the presence of the premolar. There was no space for either of these teeth in the dental arch, and a great deal of bodily movement of many of the teeth was necessary in the correction of the case. Considerable intrusion of maxillary first incisors and all mandibular incisors was necessary, as well as some extrusion of both maxillary and mandibular premolars and molars.

In my experience, the pin appliance, with individual bite planes on the maxillary first incisor bands, is the ideal appliance for the correction of conditions as illustrated here in this maxillary arch.

When the finished models were made, the second molars had not yet fully erupted and the models teetered a little. To avoid an error of the photographer, in placing them to show the occlusion, little bits of wax were stuck on where the dark spots show on the occlusal surface of the mandibular model (Fig. 2). The occlusal aspect shows that, through an oversight, the maxillary right canine had not been fully rotated. The treatment of this case was commenced a few months before I started to use the half-round pin which our

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\*Read before the American Society of Orthodontists, Atlantic City, N. J., April 26-30, 1921.

good friend, Dr. Hawley, suggested to me. Rotations are handled with the greatest ease with the half-round pin, and orthodontists who are not availing themselves of this wonderful improvement in the pin appliance are missing a great deal of joy. I have no further use for a round pin, and am now much less liable to leave a tooth rotated.

The treatment of this case was commenced in November, 1916. The pin appliance was removed from the maxillary arch in July, 1920, and the lingual wire from the mandibular arch in April, 1921, when the final casts were made (Fig. 3).

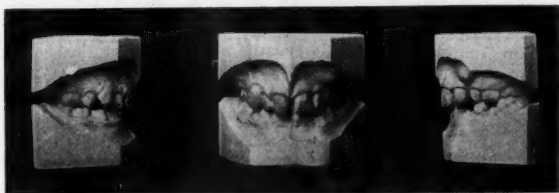


Fig. 1.

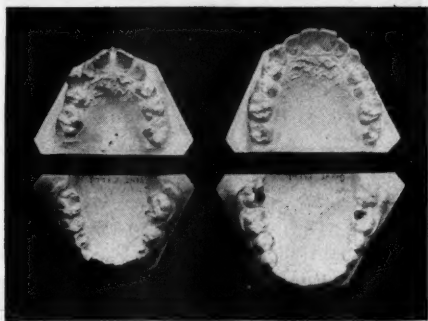


Fig. 2.

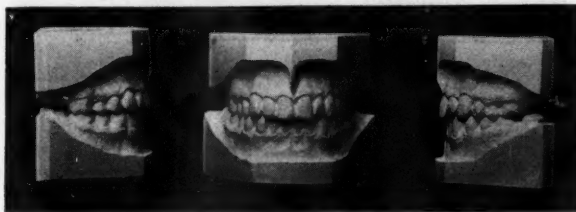


Fig. 3.

I am now using delicate springs a great deal with the pin appliance, half-round pins being soldered to the springs, and I find this adds very much to the efficiency of the appliance and shortens considerably the time of treatment. The more delicate application of force, too, makes it possible to allow the patients greater intervals between appointments.

There were no photographs taken of this patient, a boy thirteen years old, when treatment was commenced.

#### REPORT OF CLASS II CASE

The case which I desire to report is very similar to that just presented by Dr. Burrill, in that there was an abnormal inclination of the roots of both maxillary and mandibular incisors and also an excessive overbite (Fig. 4).



The boy was twelve years of age when treatment was commenced in October, 1917. He had two habits—biting his nails and supporting his chin with his hand when sitting reading. He was also very lax in mastication.

The pin appliance, with half-round pins, was used upon both maxillary and mandibular teeth from the commencement of treatment.

In this type of case it is now my practice, in most instances, to place individual bite planes upon the maxillary first incisor bands at the commencement of treatment. Locks are soldered to the wire to rest gingivally to the tubes on the first incisors, so that the force of occlusion upon the bite planes is delivered to all the teeth. If it is desired to depress maxillary first incisors there are no locks placed upon these teeth, and they thus receive the whole impact of the occlusion until such time as they have been carried to the



Fig. 5.

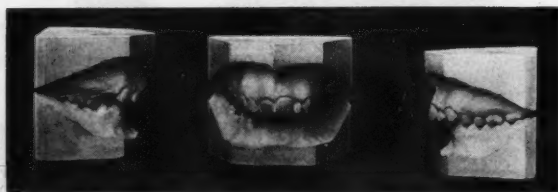


Fig. 4.

plane desired, then the locks are placed to distribute the force to all the teeth. In this case, bite planes were not placed at the beginning of treatment, as my technic at that time was somewhat different than now, but they were put on later.

Fig. 5 shows occlusal aspect of original and final casts.

There was some lack of forward development of the mandible, and it was necessary to carry all the teeth in the mandible bodily forward in the bone by means of intermaxillary elastics. The pin appliance is ideal for this work, and, by its use, the tipping labially of the mandibular incisors, as a result of the presence of the bite planes, can be prevented. The pin appliance upon the maxillary teeth also prevents the lingual tipping of the incisal ends of the teeth carrying the planes.

The forward development of the mandible and the general development of both jaws was obtained by means of the pterygoid and masticatory exercises, as suggested by Dr. Rogers, in addition to the action of the appliances.

Dr. Hawley brought out an important point, namely, that a lack of proper width of the maxillary arch in the canine region will cause an interference which prevents the mandible getting far enough forward to permit of normal cusp relationship. Too much overbite and overeruption of both maxillary and mandibular canines have the same effect, and I believe many cases fail as a result of lack of detail in these respects. I intrude the canines where necessary.

In September, 1920, the pin appliance was removed from both maxillary and mandibular teeth. At this time a Hawley Bite Plate was placed on the



Fig. 6.



Fig. 7.

maxillary arch and a lingual wire on the mandibular arch. In December of the same year the bite plate broke and was discontinued, and in the following month the lingual wire was removed from the mandibular arch.

The final casts (Fig. 6) were made in April, 1921.

Fig. 7 shows the original and final photographs.

The pterygoid exercise has been discontinued and the patient cannot now close the teeth comfortably in any other relation than the normal.

## READINESS TO SERVE\*

BY HENRY F. HOFFMAN, D.D.S., DENVER, COLORADO

**I**N ORTHODONTIA, perhaps, more than in any other specialty in dentistry or in general practice, is the habit easily acquired of wasting the time of both patient and operator.

Time is the strongest argument against orthodontic treatment; the time used by the operator, the time consumed by the patient and the period of time covered to secure a complete result. The consumption of an unnecessary amount of actual time and the prolongation of the treatments over an unnecessary length of time results in increased expense to patient and operator, increased liability to dental and systemic disease and discouragement of the patient, all of which results are in time reflected in the mental attitude of the public toward orthodontic treatment, and can reasonably be attributed as the sole reason why treatment is not undertaken in many cases. Recognizing these facts should we not make every effort to conserve our own as well as our patient's time?

Conservation of time can best be accomplished by thorough preparation for work. By that I mean not only a familiarity with the various steps of the work, which every orthodontist is supposed to have, but a careful technic regarding the arrangement and preparation of the office equipment and materials. These should be so arranged that the various appliances and materials needed for the routine operations are so located that they can be reached with the minimum of effort and those most frequently used should be given the most convenient location. Everything should have its own individual place and should always be there. This arrangement should have the positive certainty which is indicative of the piano keyboard. The trained operator should know that with his eyes closed and without conscious effort he could place his hand on anything needed for his routine work. The air, gas, lights, heaters and the like should be so placed as to avoid unnecessary steps and movements. Offices equipped with two or more chairs should present exact duplication in equipment or the investment is largely wasted. This is also true even though there are individual operators for the several units. No one should be permitted to come into a systematized office and disturb that system.

I fear that this condition is not always found in the offices of orthodontists and dentists. The reason for the hit and miss arrangement so often seen can easily be understood. The habits of the college and the first years of practice are easily acquired and difficult to overcome. During that period we do not know accurately what will be needed for a given operation, we do not know the things most frequently used and perhaps have more instruments

\*Read before the Rocky Mountain Society of Orthodontists, November 15, 1921



than we know what to do with. In the order in which they are acquired instruments find a resting place where they are most easily disposed of, perhaps a new resting place every time they are used, but granting their location is permanent, that location is seldom selected with any consideration for being an aid to rapid operating. Often one drawer or compartment is the recipient of a loose, heterogeneous collection of instruments or materials many of which are used repeatedly during the day's work, yet the operator, each time he has to use one of these, has literally to paw over this collection to find what is wanted at the cost of mental confusion and loss of time.

So these habits growing unnoticed during the period when the operator's time is not fully occupied are frequently destined to become a lifelong handicap to rapid, efficient work. It is only the exceptional man who goes deliberately about a complete reorganization of his methods of work, for such reorganization requires application and conscious effort extending over a considerable period with the realization that this effort is itself temporarily costing considerable time and confusion. However, any amount of effort expended in a sane office reorganization is more than compensated for in the increased efficiency resulting.

Of late years we have heard a great deal about office efficiency, salesmanship, and the like but it must be admitted that most of this has been from the standpoint of making a charge for every minute of time consumed, much less attention than deserved being given to the equally important point of making every minute of that time of the greatest value to the patient.

By being prepared to do in the minimum of time any routine operation without special preparation for that one operation many of the emergency needs of the patient can be supplied at the time they present without the necessity for a special appointment, otherwise necessary, thereby conserving the time of the operator and bringing the treatments to an earlier termination.

The minute a band, a spring, a spur, or anything of the sort is needed and not supplied at that time, the termination of the case is delayed, yet how often is such a simple act put off merely because it takes too long to light the gas, fix the air valve, find the right pliers, the right size wire, a piece of solder and get the dirt out of the flux, all of which should require about as much time as does the telling of it.

Often more time is consumed in making an appointment than should be required for the particular part of the operation for which the appointment is made.

The mental attitude of the operator who works under favorable conditions, who knows where everything is and that everything is there, who knows what everything is for and how to use it, is quickly reflected in the responsiveness of the patient to the work.

Some professional men equip themselves for everything but their work. They are wonderful entertainers, they can keep anything from a four year old child to a ninety-nine year old corpse occupied for an unlimited time and get nothing done. It may be put down as a general rule that our patients, in-

cluding the children, soon notice and become very appreciative of our efforts to conserve their time.

The operator who has mastered the art of working under favorable conditions finds himself accomplishing more work with less effort and wonders what he used to do with his time. Readiness to perform our work with a minimum of time and effort produces better results, eliminates unnecessary overhead, makes our work available to more people, and creates a feeling of confidence in the public mind which nothing else can do.

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### DENTITION AS A NORMAL PHYSIOLOGIC PROCESS\*

BY HENRY HEIMAN, M.D., NEW YORK

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**"D**OCTOR, my baby is ill. He must be teething." This is almost a universal cry. It is uttered by the lips of thousands of mothers to thousands of physicians in a thousand different places.

Every disease to which infancy is susceptible has been attributed to the eruption of teeth. Fevers, "colds," bronchitis, influenza, measles, infantile paralysis, disturbances of stomach and intestines have all at one time or another been considered the result of teething.

It is surprising how many intelligent college-bred women give this cause as the explanation of their infants' ailments. Even more surprising to learn is that a goodly proportion of physicians still cling to this remnant of medical superstition.

It is quite time we discarded this legend. The eruption of teeth is a perfectly normal and natural process. "Teething" is not a disease, nor is it responsible for any disease or symptom. The growth of teeth does not produce fever, pain, cough, vomiting, diarrhea or convulsions. It is easily understood why mothers persist in attributing to teething these various diseases. They often occur at about the same age as dentition and it is easier for doctors to agree than disagree and explain. The diagnosis of teething at times permits diseases to develop beyond the stage where they can be controlled.

Dr. Holt says, "The doctor who starts out with the idea that in infants dentition may produce all symptoms usually gets no further than this in his etiologic investigations."

For the last twenty-five years on no history chart in our institution does a diagnosis of "teething" appear. In thirty-four years no paper on teething as a disease has been presented before the American Pediatric Society.

Dentition is a physiologic condition similar to the growth of nails or hair. It would be ridiculous to refer to "hairing" and "nailing" as afflictions of infancy.

You are all doubtless familiar with the development of the teeth. I

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\*Read before The Scientific Section of Oral Surgery of The First District Dental Society, March 1, 1922. Publication rights reserved by author.

shall give but a brief outline here. As early as the thirty-fourth to the fortieth day of intrauterine life when the embryo is twelve to fifteen mm. long the first sign of tooth formation appears. This is an ingrowth of the deeper layers of the epithelium of the mouth forming a band, part of which becomes the dental lamina. Upon this, small thickenings or buds make their appearance where teeth are to be formed. These thickened portions develop down into the submucous tissue producing a cap over the mesodermic dental papilla and form the enamel organ of the milk teeth. The dentine germ, in the form of a papilla, then arises from the mesoderm and fills up the concavity of the enamel organ. Prolongation upward of the lower and lateral margins of the dentine germ, surrounding the enamel organ and meeting over its upper surface, form the tooth sac. The cement and periodontal membrane are formed from the tooth sac. The permanent tooth is formed from the continuation of the original dental lamina or tooth band. The first traces of calcification appear about the twentieth week of intrauterine life. At birth the sacs of the first permanent molars and those of all the temporary teeth are completely developed. The crowns of the temporary incisors and one cusp of the first permanent molars are calcified.

The eruption of the teeth is a normal physiologic process. The tissue overlying the tooth becomes gradually more attenuated and absorbed. There have been a number of theories regarding the process by which this occurs.

J. Howard Mummery summarizes the most recent opinions: "It seems impossible to deny that there is a forward movement of the tooth in eruption which is probably due to many causes such as: the elongation of the roots, the growth of the bone of the jaw, the development of the periodontal membrane and the blood pressure in the vascular tissues around and beneath it.

"This advancement of the tooth is therefore probably due to several concomitant forces and is one factor in eruption, the other being the absorption and opening out of the tissues overlying the tooth."

Swollen gums do not exist in the natural process of teething. Before the tooth appears the gums surrounding become more prominent. This is not at all an abnormal condition. It does not produce pain, fever, or any other disturbance. A reddened, swollen gum, sometimes hemorrhagic, indicates a gingivitis which is not infrequently associated with a stomatitis, or scurvy.

The pain which sometimes accompanies the development of the so-called "wisdom" tooth is due to its peculiar position. This latter is produced by the changing configuration of the jaw of the Caucasian race during the process of evolution from an oblique angle to a right or perhaps eventually an acute angle. There is evidence too in the wisdom tooth or third molar of a rudimentary development. The fang is curved and grooved indicating traces of a subdivision into three fangs. This evolutionary process does not affect the eruption of babies' teeth in any manner whatsoever.

A common belief is that drooling is caused by dentition. This is not true. It occurs very commonly at the same period but from an entirely different source. It indicates that the three salivary glands have become active. This is essential for the digestion of starchy food.



Very frequently a mother will tell us her baby is teething because he keeps his fingers in his mouth. Well, where else should he keep them.

The time of eruption of the teeth is dependent on three main factors: first, the individual constitution, second, the food intake and third, the metabolism.

We cannot control the individual constitution. In Cretinism, which is a disease of infancy due to thyroid insufficiency, dentition is considerably delayed. The metabolic rate is very much diminished.

In rickets, which is usually caused by improper food intake, dentition is retarded.

The late appearance of the teeth, however, does not mean difficult dentition. What are the therapeutic measures to be applied regarding dentition? Several methods have been used, some of which unquestionably should be discarded. A very bad practice, not uncommonly employed, is to rub the gums. This does not in any case promote the growth or influence the eruption of the teeth. Interference of this kind can only do harm by causing irritation and inflammation. Could rubbing the scalp influence the growth of hair? If so, this is valuable information for many of us.

Cutting the gums is a pernicious practice. Such a procedure can only retard the eruption of the teeth. A scar may be formed, the gums will be thickened and dentition then becomes difficult indeed.

There is but one way to aid Nature: furnish the proper food. Normal breast milk is perfect. It contains all the necessary ingredients including the salts of potassium, magnesium, calcium, sodium, iron, iodine, sulphur, phosphorus, chlorine. With artificial feeding the addition of fruit juices is of great value.

Let us then no longer consider the eruption of teeth as a disease or cause of disease but a normal physiologic process.

## DEPARTMENT OF ORAL SURGERY AND SURGICAL ORTHODONTIA

Under Editorial Supervision of

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### IMPACTED TEETH AND THEIR RELATIONSHIP TO CHRONIC SYSTEMIC DISORDERS

BY MATTHEW F. EUSTERMAN, D.D.S.

*Fellow in Dental Surgery, The Mayo Foundation, Rochester, Minn.*

NINE thousand five hundred sixty-four patients were referred to the Dental Department of the Mayo Clinic for full mouth roentgenograms between June 3 and December 15, 1921. The examinations were made in the department as part of the routine of physical examination or in a definite search for foci



Fig. 1.—Impaction with infection of mandibular right third molar.

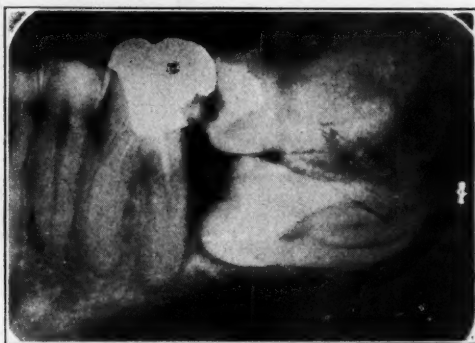


Fig. 2.—Impactions with infection of mandibular right second and third molars.

of infection. The tentative physical diagnoses or the chief complaint was indicated on the patient's refer card. Approximately 8 per cent of the patients in this group had impacted and unerupted teeth that required removal. The data in the tabulation pertain to the number and type of impactions, and the various unerupted teeth that might be factors in the cause of disease.

It is difficult to determine the relationship of unerupted and impacted teeth to systemic disorders. According to the literature, affections of the

eye, ear, and brain are very often relieved by the removal of impacted teeth. In such instances the malposition of the teeth have caused trophic disturbances, and in some, damage by way of the blood stream. Their relationship, therefore, to such systemic disorders is brought about by direct pressure or reflex stimuli on nerves, and by way of the blood stream owing to the infection they harbor.

Impacted and unerupted teeth are not easily differentiated. It is assumed that the unerupted teeth referred to in this paper under ordinary circum-

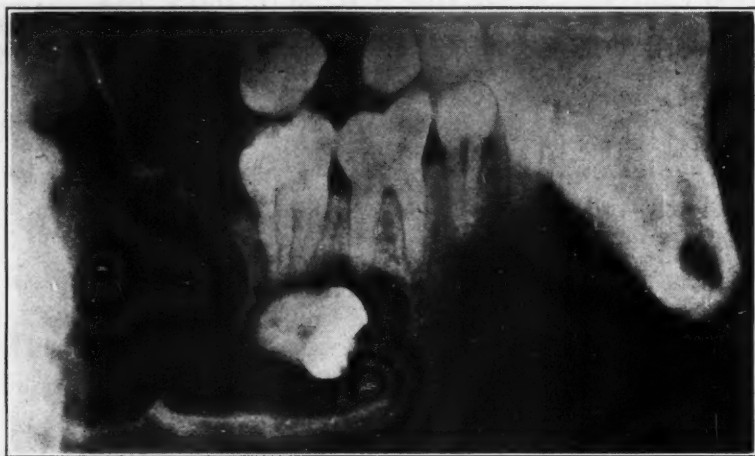


Fig. 3.—Encysted, imbedded mandibular left third molar after an attempt at removal.



Fig. 4.—Impactions without infection of mandibular right second and third molars.

stances would have taken their proper places in the dental arch, if it had not been for the reduced vitality of the patient or some nutritional disturbance intervening at the age these teeth ordinarily erupt. Impacted teeth are those whose development and eruption are impeded by displacement of the tooth-bud or tooth, by increased density of bone surrounding them, or by deflection by tissues that have become fibrous. Positive impacted teeth are those that require removal. Negative impactions are those that are allowed to remain. Mechanically impacted teeth are not included in the series.

The various data obtained in the study of this series of cases, and particularly the relief to patients with systemic disorder of having positive



impacted teeth removed, convinces me that the part impacted teeth play in causing disease is more often hematogenous than trophic.

Figs. 1, 2, and 3, disclose impacted teeth with infection and Fig. 4 discloses impactions without infection. The inevitable shadow around such teeth is not infrequently attributed to pathologic processes; minute lesions are regarded too often as shadows due to malposition. Data concerning history, palpation, and uncontaminated cultures should be factors in cases in which there is doubt as to whether or not such teeth should be removed.

The tabulated data given is an indication that impacted and unerupted teeth as factors in systemic disorders may play a conspicuous part by way of the blood stream and not infrequently by their direct pressure on nerves or reflex stimuli.

TABLE I

IMPACTED AND UNERUPTED TEETH	
Patients .....	9564
Patients with positive impacted teeth .....	699
Patients with negative impacted teeth .....	65
Average age of patients .....	34
Positive impacted teeth .....	1063
Negative impacted teeth .....	129
TYPE OF POSITIVE IMPACTED TEETH	
Maxillary left third molars .....	195
Maxillary right third molars .....	208
Mandibular left third molars .....	263
Mandibular right third molars .....	265
Maxillary left canines .....	56
Maxillary right canines .....	54
Mandibular left canines .....	3
Mandibular right canines .....	2
Mandibular right first premolars .....	2
Mandibular right second premolars .....	4
Mandibular left second premolars .....	1
Maxillary left first premolars .....	1
Maxillary right first premolars .....	1
Maxillary right second premolars .....	1
Maxillary left centrals .....	2
Maxillary right central .....	1
Maxillary left first molar .....	1
Maxillary left second molar .....	1
Maxillary right second molar .....	1
Mandibular right first molar .....	1
CHIEF SYSTEMIC COMPLAINT OF PATIENTS WITH POSITIVE IMPACTED TEETH	
	Patients
Poor general condition .....	89
Arthritis .....	76
Gastric disorders .....	76
Lesions of kidney and bladder .....	50
Neuritis and myositis .....	47
Headaches .....	28
Backaches .....	27
Diseases of the galibladder .....	21
Diseases of the heart .....	15
Diseases of the nose and throat .....	14
Diseases of the skin .....	13
Syphilis .....	9
Anemia .....	9
Tuberculosis .....	9
Diseases of the ear .....	8
Diseases of the eye .....	9
Epileptiform seizures .....	8

## SUMMARY

1. Approximately 8 per cent of 9564 patients had impacted teeth.
2. Approximately 90 per cent of the impacted teeth required removal either as a prophylactic measure, because of their position or because of the infection they harbored.
3. Forty-nine per cent of positive impactions were of mandibular third molars, 35 per cent were of maxillary third molars, 10 per cent were of maxillary canines.
4. Impacted canines are usually found in pairs.
5. Impacted teeth are not, in the main, associated with general disorders.
6. Clinical observation and the pathologic findings make it evident that the part impacted teeth play in causing disease is more often hematogenous than by direct pressure or reflex stimuli on nerves.
7. The number and kinds of impactions demand consideration of the displacement-bud theory in the development and eruption of such teeth.

# DEPARTMENT OF DENTAL AND ORAL RADIOGRAPHY

Edited By

Clarence O. Simpson, M.D., D.D.S., and Howard R. Raper, D.D.S.

## PROFESSIONAL RADIOGRAPHY VS. COMMERCIAL RADIOGRAPHY

BY DR. F. J. COLLAR, ALAMEDA, CAL.

**D**R. HOWARD RAPER, author of the standard text book on radiography established the term radiodontist for a professional man required to have a license to practice dentistry the same as an orthodontist, prosthodontist, or exodontist, but who specializes in radiography. This class is represented by the newly organized American Society of Dental Radiographers.

The radiographer, on the other hand, is simply a technician who has developed the necessary procedure for making radiograms the same as the photographer makes a photograph. He is not required to have a license. He has not been trained in the studies of anatomy, pathology, bacteriology and modern methods of sterilization. He is not able to recognize the symptoms of the various contagious diseases which are prevalent and he is handling all classes and races of people who might be carriers of almost every disease known to men. This class is represented by the California Association of Radiographers.

A history of the origin of one of the commercial x-ray laboratories is a repetition of almost all of them. One of the leading dental supply salesmen of Los Angeles foresaw the commercial possibilities of the x-ray game, as he terms it, and procured the necessary financial backing to equip an x-ray laboratory. On account of his intimate acquaintance and friendship with a large percentage of the dentists, he immediately had a large following as soon as he sent out his announcements and price lists. His technical knowledge of the x-ray, he acquired from selling x-ray machines. His knowledge of pathology, histology, methods of sterilization, diseases and anatomy, he learned while walking the streets and visiting dental offices. He is no longer a hard working dental salesman but after a few years of operating his laboratory, he is the owner of an orange grove and remarked recently, that if they hold off dental legislation governing x-ray laboratories for another year, he will not care what they do, for he can retire.



Bearing on this subject some startling statements are made in a letter from Dr. James McCoy of Los Angeles, author of *Dental and Oral Radiography*, and shows to what extent commercial radiographers have usurped this branch of dentistry in some sections of the country. His letter, in part, reads as follows:

"Dear Doctor: In reply to your letter of February 9, relative to dentists in this section capable of contributing to the program of the American Society of Dental Radiographers, I wish to say that to my definite knowledge we have none here. This is a sad acknowledgment and I can give you a very definite reason for the existence of such a condition, to wit: The lay radiographer has so monopolized the field of dental and oral radiography in this section that capable, educated dentists do not feel like entering into competition with them. We have any number of these men conducting dental picture galleries here. Personally, I know they have no legal or moral right to do this work and they should not receive the support of the profession and do not receive the support of the better element. The possibility of the Southern California Dental Association ever endorsing the lay radiographer in any form, is exceedingly remote."

We spend a great deal of time and energy discussing legislation and education of the dental hygienist who polishes the exposed surface of the teeth under our personal supervision; all of which is working out very satisfactorily, then for various reasons we shut our eyes to the most important and dangerous branch of dental practice in sending patients to commercial laboratories. My intentions are not to indulge in personalities, but to call attention to some of our shortcomings and inconsistencies in forgetting all our duties and obligations as professional men in our effort to develop radiographic technic.

The importance of radiography in oral diagnosis and dental operations has reached a degree where the modern practice of dentistry cannot be conducted without it. The extensive utility of radiography may be truthfully described as being an aid to the performance of all operations except the polishing of teeth and the treatment of superficial caries. However, the dental profession has not generally adopted radiographic examinations to the extent they should be applied for the greatest operating facilities and the most efficient service. Dentists are prone to seek the assistance of radiography only when complications arise instead of using it as a routine procedure to prevent complications. This may be due to a lack of appreciation of its innumerable advantages or a lack of knowledge in employing it to the greatest advantage. A similar condition would exist in any branch of practice which had been given as little technical consideration and serious study. When dentists believe that the chief factor in radiography is the machine and get their instructions from a salesman, they should not expect to get the maximum benefit from its use in practice.

If cleaning the exposed surfaces of the teeth, involving no danger of life to patient or operator is lawfully a dental operation, is the placing of a dental film in the mouth and making the exposure involving grave dangers to

both patient and operator, less a dental operation? We, as dentists, limit our practice to certain classes and races of people which automatically eliminates a large percentage of disease and we take every advantage of modern methods of sterilization to protect ourselves and our patients. Then we send them to these commercial x-ray laboratories where they are compelled to take their turn in this "melting pot" of human diseases. Some dentists have tried doing their own radiography and have concluded that it was not a paying proposition. Others have the mistaken idea that they are too busy to do this branch of dentistry. It is the busiest dentist who should do his own radiography for he can conserve his time and increase his efficiency, and at the end of the day he will find that he has accomplished a great deal more and has been able to give his patient better service than he could if he had to stop in the middle of his operation and send his patient to a laboratory and, as many do, depend upon the laboratory to interpret the film for him.

Dr. O. E. Lamphear in a paper on "The Radiogram and Its Interpretations," read before the Michigan State Dental Society says, "The diagnosis is not taken from the film except in rare cases, but is made up from many factors, interpretation of the film, the clinical and laboratory findings, etc."

A definite order of routine in classifying cases, combined with trained analytical judgment in interpretation, careful checking with the history chart, which was taken before radiographing the subject, will build up ability that enhances the value of the opinion of any radiodontist sufficient to make it very much worth while professionally, provided he has followed his case to the operating chair.

Does the radiogram show any variations from the standard normal, abnormal growth, or the cause of lesions? Do they appear to give any symptoms regarding the patient's case? Are the radiographic findings corroborative of the laboratory findings? Do the radiographer's findings agree with the physical findings? Does anything in either suggest a solution of the other? Do they agree with the findings of the clinician or internist?

Dr. Pollia in a recent article states: "To attempt to recognize a carcinoma of the stomach microscopically without having a mental picture of the normal epithelial layer is not commendable to say the least; yet, the number who attempt to read radiograms and point out the pathologic variations and still are unable to describe or definitely state the normal, is appalling. The very fact that the study of the attributes of normal alveolar process seen in the radiogram has been neglected, explains why many teeth which are actually diseased, with diseased perialveolar bone tissue, have been overlooked much to the patient's detriment. On the other hand, many pulpless teeth having nothing but the projection of a foramen at the apices, have been extracted much to the patient's loss, and the dentist's silent anguish." In speaking of bone conditions, he says, "Let me repeat that radiographically it is impossible to differentiate from the changes in the affected structure itself, which of these influences is operating. This is determined by other means, such as the location of the lesion in relation to the root, the presence or absence of dental interference, history, clinical examination, etc."

In the July number of the *Pacific Dental Gazette*, you will find published Dr. Howerd Raper's list of 83 possible mistakes that can be made in the interpretation of dental radiograms. I would suggest that you read this list over and decide for yourself, how many of these mistakes the commercial radiographer could recognize.

Albert H. Stephens, in a paper read before the National Dental Association in Boston in 1920, says, "I will particularly emphasize the menace of dental diagnostic work as carried on in some industrial clinics where there is no fixed responsibility. The taking and interpreting of dental radiograms requires diagnostic ability only acquired by experience and is too important a phase of dental service to be performed at these clinics. It was to prevent irresponsible dentistry, that the law of New York State was amended to prohibit corporation dentistry, so in our zeal for public service we should not endorse a return to another form of corporation dentistry with its old abuses."

Some years ago we in California spent a great deal of time, money and energy passing laws prohibiting the practice of corporation dentistry in the state of California, and almost before the laws went into effect, we permitted corporations to practice one of the most important branches of dentistry and open branch x-ray laboratories throughout the country like a string of Chauncy Wright Restaurants or Piggly-Wiggly Groceterias. It is true that we have injected some of our professional knowledge into these laboratories, but in so doing we are sliding down the scale of professional standards and all will soon be on the level with the commercial laboratory with all its evils and abuses.

I have a little pamphlet here entitled "The Prostitution of Radiography." This is very interesting for reasons which will be seen when I state some of its contents. It tells many of the evils and dangers of the commercial laboratories, some of which I have mentioned, and many more which we all know exist.

"Many states have laws which make it necessary for those practicing dentistry, or conducting (dental parlors) or advertising offices, to use their own names, but, regardless of this, x-ray laboratories are allowed to exist and solicit business from the profession without using any individual's name.

"Much has been written on the paying of commissions; still x-ray laboratories openly advertise such facts. Even though we disapprove of the paying of commissions, we must confess respect for the laboratory that is bold enough to advertise its plan, and not do as some dental and medical men do; namely, condemn the practice openly and be a party to it privately."

In summing up this article which has caused so much comment, we note the following facts:

1. "That from the lack of knowledge of the tissue involved the radiologist is unable to diagnose radiograms. (Our laboratories have graduate dentists, physicians and pathologists make the diagnosis.)"
2. "That from the lack of professional ethics the standard of dentistry will surely be lowered. (Our laboratories are owned and controlled by den-



tists who have and are doing a great deal for dentistry and are manned by officers or ex-officers of the City, State and National Dental Association.)”

3. “That by the lack of knowledge of hygiene and antisepsis there is a great danger of infecting patients in taking radiograms. (Our laboratories sterilize their films and take every precaution to prevent infection.)”

“(If you wish to raise the standard of dentistry, patronize our laboratories.)”

In regard to the ethics of this work, I shall quote some extracts from the constitution and by-laws of the American Roentgen Ray Society, which has been in existence for over twenty-two years.

“A. The roentgenologist, being a consulting diagnostician, should reveal his findings only to the attending physician or surgeon who has referred the case to him, and not to the patient, except by the specific request or permission of such attending physician or surgeon.

“B. It shall be unethical to claim *superiority in diagnosis* or treatment due to some secret method, or apparatus, *improvement in existing methods*, or apparatus, held to be known to the claimant.

“C. It shall be considered unethical to advertise by circulating either the medical or the laity, with price lists, description of office facilities, etc.

“D. It should be considered unwise (1st) to accept as a patient anyone not sent by a reputable physician or surgeon; (2nd) To provide the patient or his relatives with plates or prints taken for diagnostic purposes.”

Do you know of any x-ray laboratories that are not violating these by-laws which are the same standard which we professional men try to uphold?

Dr. Alonzo C. Tenny, President of the Chicago Radiological Association, says: “My opinion is that after January 1st, the elimination of fee splitting, rebating and corrupt methods will be accomplished and laboratories owned and operated by those who are not registered physicians or dentists in the state of Illinois will be unable to secure a license to operate in Chicago.”

Dr. Clarence O. Simpson of St. Louis, in a lecture before the Chicago Dental Society, offers some suggestions which are good food for thought. Speaking of x-ray laboratories he says: “Although the situation is lamentable, it is only temporary and entirely remediable. Every state has laws regulating the practice of dentistry, which, if enforced, would put a ban upon unlicensed and incompetent *x-ray operators at once*. The function of dental boards is to safeguard the oral health of the people in the respective states, but their activities suggest a desire to protect the dental profession rather than the public, since their procedure is carefully studied to win the favor of a majority of the profession in the states. If the Chicago Dental Society and the St. Louis Dental Society should pass resolutions condemning the laxity in restriction of radiodontic practice, and demand a strict enforcement of laws, the state boards of Dental Examiners in Illinois and Missouri would doubtless be alarmed until they could call a special session to conform.

“Why have the advertising dental parlors no standing with the pro-

fession? We are told it is because they did not fulfill advertized promises. The service rendered was inferior; they advertized operations at fees lower than adequate service could be rendered; and they operated under fake firm names instead of licensed individuals. The dental x-ray laboratories do all of these things but continue to prey upon the people unmolested.

"Commercial x-ray laboratories are tolerated because the discriminating portion of the dental profession knows little about them and ignores them; while the 'penny grafting' portion utilizes them to capitalize the fear of the ignorant by replacing questionable teeth with unquestionably septic bridges, performing absurd surgical (?) operations, and in many instances exacting tainted tribute from the laboratories by 'fee splitting, accepting commissions and dividends.' These laboratories could not exist without the connivance of dentists, and would be eliminated if all dentists refused to accept films from an unlicensed operator, an incompetent operator, or one not conducting a practice in conformity to the recognized standard of service and ethics in other specialties.

"There are marked indications of improvement in that the leading reputable dental journals will not accept advertizing from commercial laboratories and official action has been taken in some localities to restrain dentists from receiving commissions for referring patients. When more knowledge and discrimination are applied to radiographic diagnosis after dentists have been repeatedly misled in diagnosis and subsequent procedure, and a large portion of the laity have become victims of inferior and dishonest radiography, a much higher standard of practice will be required and established."

Unless you have followed the evolutions of radiography for the past few years you do not realize what has taken place here in California or what the possible results will be. Among the members of the California Association of Radiographers, there are a few very illustrious exceptions, not typical representatives of the men who exploit commercial radiography. These men have made a study of gross anatomy and pathology and have developed wonderful technic enabling them to give interpretation which is a great assistance to members of both the medical and dental profession. These exceptions have developed in all professions during their evolution before they were regulated by law. Four years ago I had a lengthy discussion with one of these men who at the time expressed himself very emphatically about the danger of radiography if practiced by unlicensed operators. His ideal for the future of radiography at that time was that it should be a separate branch of science the same as dentistry, medicine or pharmacy with state laws governing that particular branch. Since then great progress has been made in that direction by the *organization* of an association of radiographers, and now I understand that they have the endorsement of the medical society and are attempting to get the endorsement of the dental society both here and in Southern California. Their object is to pass laws limiting practice of radiography, which, if put into effect, would prohibit you who are now doing your own radiography from doing it without passing an examination and securing a license.

This is a serious situation which needs our immediate attention and co-operation: Are we going to sit idle and allow the commercial radiographer to not only take away from us some of our most important branches of dentistry, but to dictate as to what our requirements should be in order to practice radiography; or should we join forces with the American Society of Dental Radiographers and by our united efforts endeavor to keep radiography where it rightfully belongs?

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## PLACING AND HOLDING FILMS IN THE MOUTH

(PART I: GENERAL CONSIDERATIONS. PART II: TECHNIC BY REGIONS.)

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BY HOWARD R. RAPER, D.D.S., INDIANAPOLIS AND ALBUQUERQUE

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*(Continued from the June issue.)*

### PART II. TECHNIC BY REGIONS

WE shall now take up the technic of placing and holding films, by regions so to speak. We shall consider placing the film in the various regions for a 12-film radiodontic survey. (See Figs. 13, 14, and 15.)

I suggest that the reader read the legends under the illustrations to learn the details in technic for the various regions. The regions are taken up in the following order:

Mandibular incisor region, Figs. 16 to 19 inclusive.

Mandibular canine and premolar region, Figs. 20 to 24 inclusive.

Mandibular molar region, Figs. 25 to 27B inclusive.

Maxillary incisor region, Figs. 28 to 31 inclusive.

Maxillary canine region, Figs. 32 to 35 inclusive.

Maxillary premolar (and first molar) region, Figs. 36 to 37 inclusive.

Maxillary molar region, Figs. 38 to 41 inclusive.

(For illustrations see following pages and August issue.)



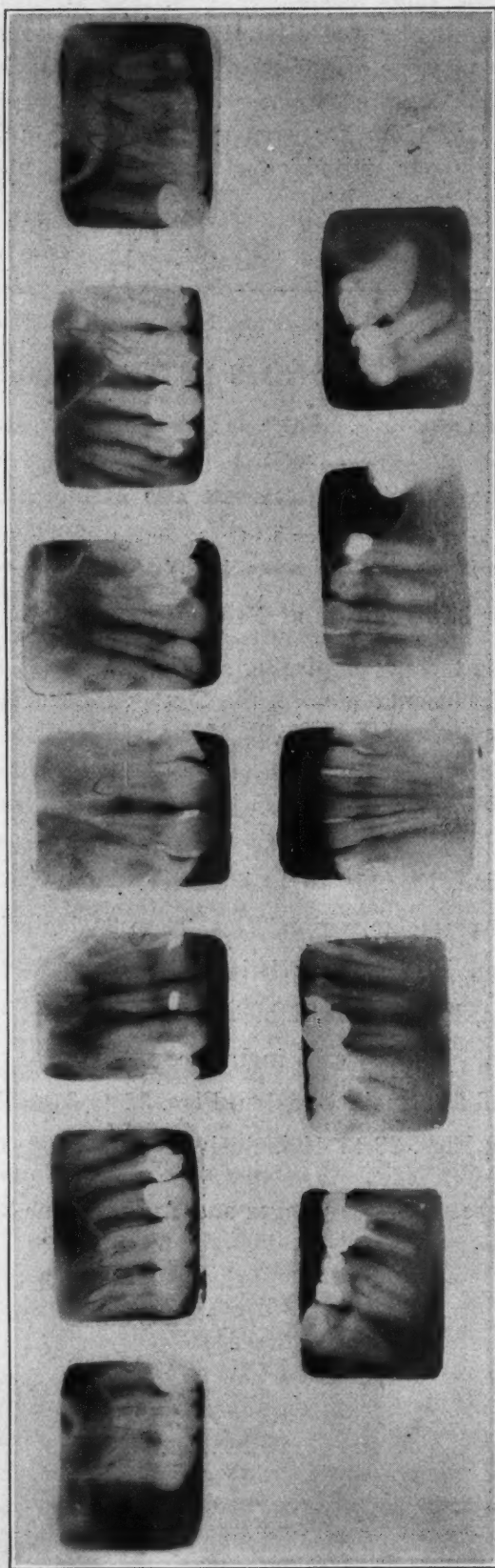


Fig. 13.—A 12-negative radiographic survey of the mouth. Holder No. 1 was used for all the maxillary teeth, No. 3 for the incisors and No. 2 for the others.

The advantages of using 7 instead of 5 or 6 films for the maxillary teeth are: (1) We get a much better view of the anterior teeth. When only 5 films are used we sometimes fail to get a good radiographic view of one or more of the incisors. When 6 films are used, two films are used for the incisors, a central and lateral on each. The central lateral combination is a fair one, but the anterior palatine foramen sometimes falls at the apex of a central; this makes diagnosis more difficult. (2) When 7 films are used for the maxillary teeth, it is not necessary to put the canine and premolars on the same film. This is advantageous because the correct vertico-horizontal angle for the canine is higher than the best angle for the premolars. (3) The film which gets the premolars includes the first molar also, and usually the second. Thus when we make another negative of the molar region, we can make it at a slightly different mesio-distal angle. This is very advantageous; we can throw the shadow of the molar bone and process first distally (when the premolars are included) then mesially in the next exposure. Maxillary molars are difficult to radiograph; with the two views, what one radiograph does not show the other may.

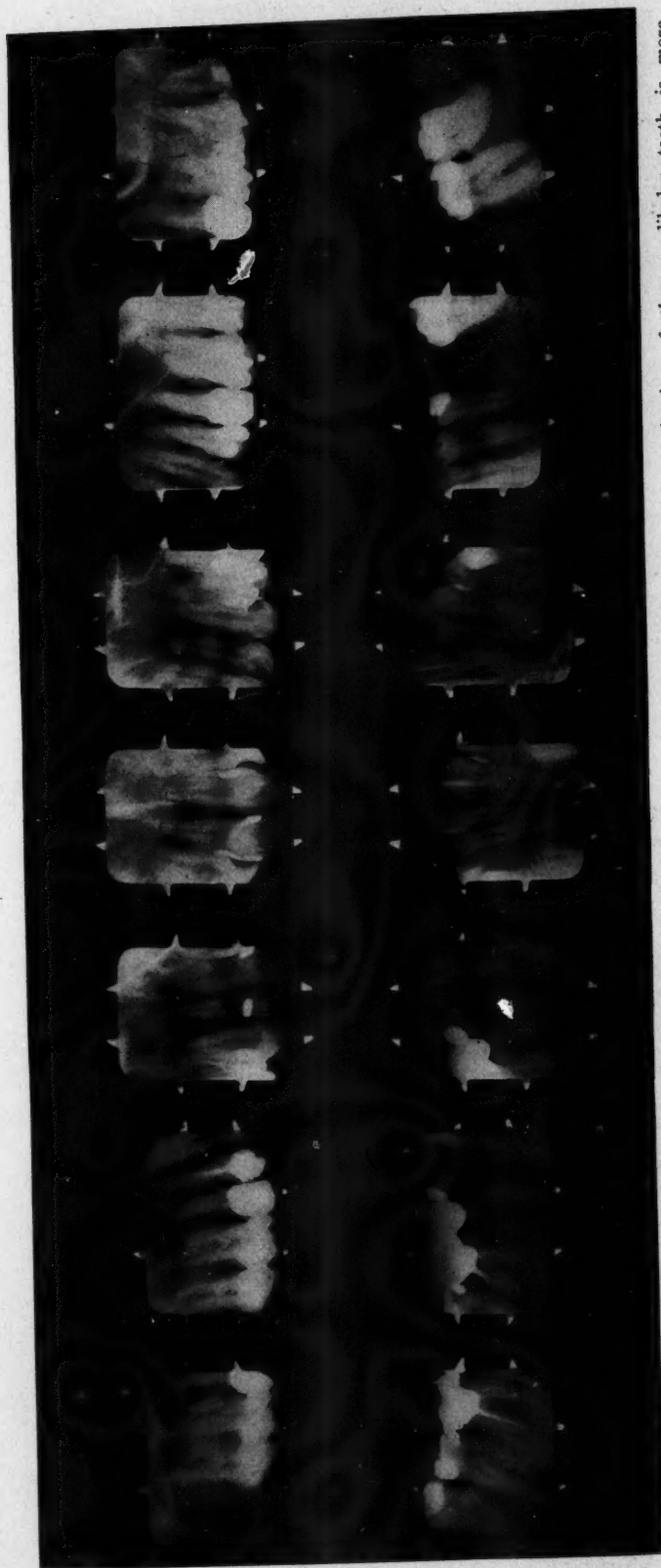


Fig. 14.—A 14-negative examination has distinct advantage over a 12-negative examination in that the examination of the mandibular teeth is more thorough. When only 5 films are used for the mandibular teeth, the radiographic view of the mandibular anterior teeth is not always as good as it should be and sometimes one fails to get a good view of all of the molars.

The original radiographic survey of the mouth, whether it be a 10- or a 14-film survey "is the beginning, not the end," of a radiodontic examination. However, fewer additional negatives need be added when the original survey is a 14-film one. Sometimes a 14-film survey will give an excellent view of all parts of the mouth. Less frequently a 12-film survey will give a good radiographic view of all parts of the mouth. The 10- or 11-film surveys practically never give a good radiographic view of all parts of the mouth.

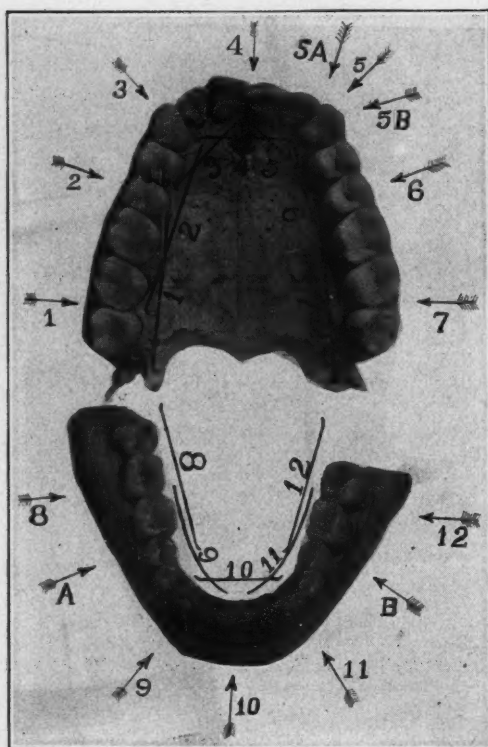


Fig. 15.—The line to the lingual of the teeth indicates the approximate position of the films for a 12-film mouth examination (see Fig. 13). The arrows indicate the mesio-distal angle. For the 14-film survey 7 films are used for the mandibular teeth as well as the maxillary teeth. The lines *A* and *B* indicate the mesio-distal angle for the additional films when 7 films are used for the mandibular teeth.

### Mandibular Incisor Region



Fig. 16.—Mandibular incisor region. Bending the film for the mandibular incisor region. This illustration shows one side already bent and the other being bent back.

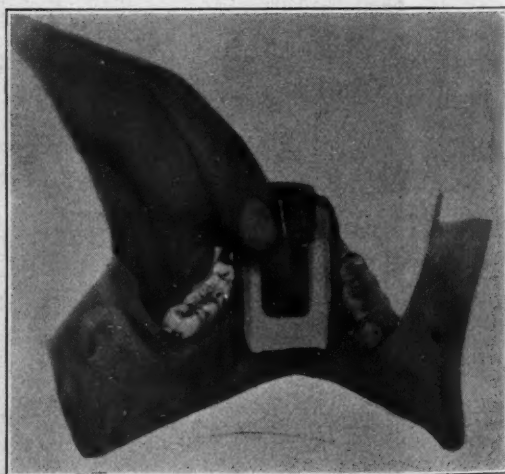


Fig. 17.—Mandibular incisor region. Putting the film packet (held in the film holder) in place.





Fig. 18.—Mandibular incisor region. Showing the film holder held in place in the patient's mouth. (The black paper of the film packet has been retouched to make it show plainer against the dark background of the patient's open mouth.)

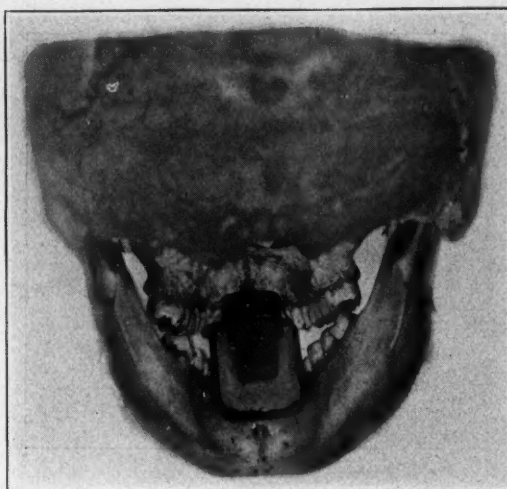


Fig. 19.—Mandibular incisor region. Lingual view of the film packet held in position. (Holder No. 3 for this region.)

### Mandibular Canine and Premolar Region



Fig. 20.

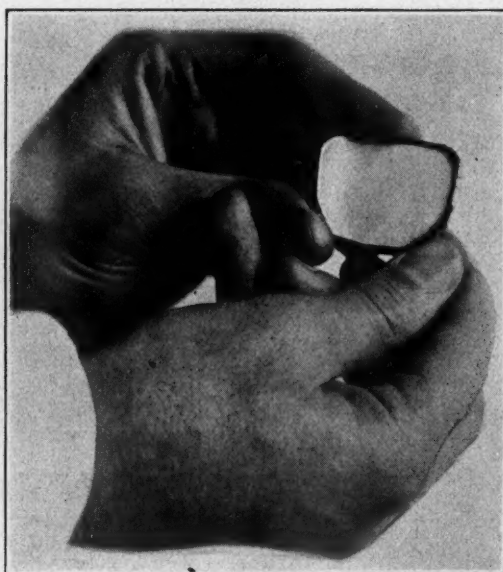


Fig. 21.

Figs. 20 and 21.—Mandibular canine and premolar region. The film packet is being bent for the mandibular right canine and premolar region. First it is bent as illustrated in Fig. 20, then the front and back lower corners are bent also, Fig. 21.

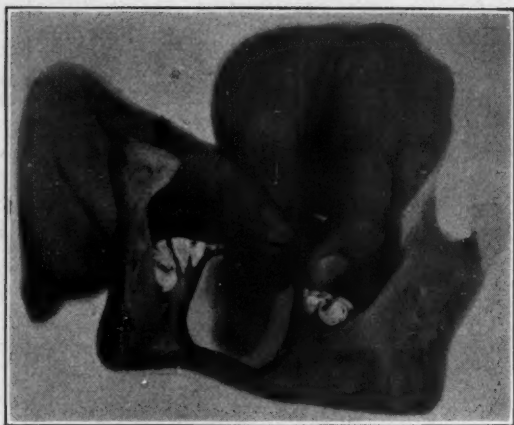


Fig. 22.—Mandibular canine and premolar region. The film packet (held in the film holder) placed in position.

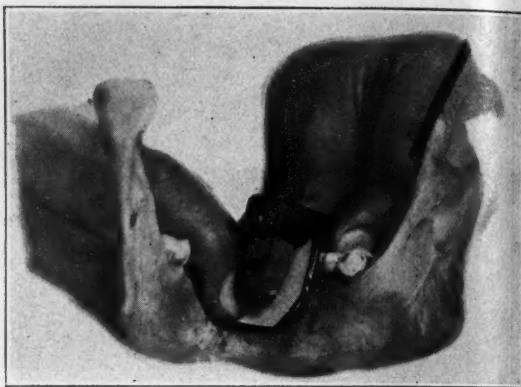


Fig. 23.—Mandibular canine and premolar region. Showing the index finger assisting in adapting the film packet to place.



Fig. 24.—Mandibular canine and premolar region. Lingual view of the film packet held in place. (Holders Nos. 1 or 2 used for this region.)

**Mandibular Molar Region**

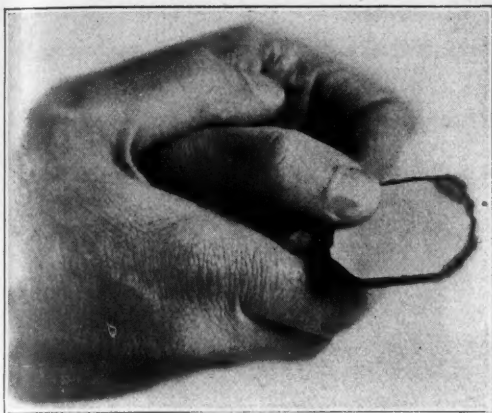


Fig. 25.—Mandibular molar region. The film packet has been bent for the mandibular right molar region. Not much bending is necessary for this region. The lower front and back and the upper back corners are all bent *slightly*.



Fig. 26.—Mandibular molar region. Lingual view of the film packet held in place. (Holders No. 1 or No. 2 for this region.)

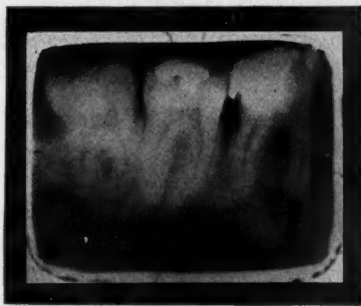


Fig. 27-A.

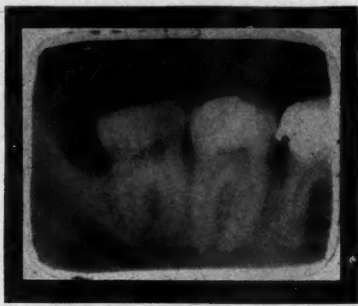


Fig. 27-B.

Figs. 27-A and 27-B.—Fig. 27-A was made with holder No. 1. Fig. 27-B was made with holder No. 3. Note that holder No. 3 holds the film so that it shows the tissues above and back of the third molar.

(To be continued in August issue)



## ***RADIODONTIC RIDDLES***

**Conducted by Clarence O. Simpson, M.D., D.D.S.**

**A Department Devoted to Discussion of the Scientific, Technical, and Ethical Problems  
of Radiodontia**

### **Radiolucence Elucidated**

**Q.**—Is it necessary to extract the lower second molar and curette the rarefied area under it to remove the possibility of infection? This case is my wife and I believe the teeth are vital, but I want to leave nothing undone to improve her health.



**Fig. 1.**

**A.**—From the radiographic evidence, the possibility of infection from this region can be excluded without removal of the teeth, or curettage of the bone. Apparently this is a typical radiolucent area due to irregular calcification and a large medullary space so often present in the mandible. These marked structural variations are commonly mistaken for diseased areas, and sufficient emphasis by description and illustration has not been given to them in text books dealing with interpretation.

Usually there is a distinct difference in the radiographic records of pathologic destruction, and normal radiolucent areas. However, the size, form, and degree of radiolucence are not the marks of differentiation. Anatomic variations may appear suspicious in location, size, and circumscribed outline, and

much darker than most diseased areas. An extensive and careful study of negatives develops a fine discernment which quickly detects pathologic changes and reduces the number of mistakes from structural diversities. If a description will convey the conception, the early changes from osteoclasia by periapical disease presents on the film a blurred, partially erased appearance with a reduced range of tones between high lights and shadows, and a tendency toward a spherical form. In distinction, normal inequalities in density show the delicate trabeculae sharply outlined and the relative contrast evident although the general shade key may be low or dark. The



Fig. 2.



Fig. 3.



Fig. 4.



Fig. 5.

Figs. 2, 3, 4, and 5.—Illustrations of typical radiolucent areas in the mandible, indicating large medullary spaces instead of disease.

lamina dura is a significant detail to be considered in this connection. Although there is a remote possibility of metastatic involvement or an obscured break in the dense wall of the alveolus, if the lamina dura can be traced intact around the roots of the teeth it is presumptive evidence that radiolucence is not the result of chronic disease. This feature of interpretation is conclusive argument for rigid technical requirements in radiodontic examinations. Only by efficient equipment, careful technic, and the exclusion of all elements of fallacy, can mistakes be avoided and the ultimate development of radiodiagnosis be attained. In this case you should have had a more thorough x-ray examination to aid you. Extraoral examinations are rarely adequate in deciding questions of this nature, and should be verified by intraoral films of all questionable regions.

Regenerated bone following destruction by disease or removal of teeth

is quite likely to vary from adjacent structure in having some large medullary spaces. This condition has led the disciples of lucrative curettage to outrage nature by the excavation of many healthy jaws, and which Dr. F. B. Moorhead has aptly termed "meddlesome surgery." If one is not the prospective subject, it is amusing to hear one of these "miner" surgeons rave over the dangerous areas in radiograms of edentulous regions, all of which to his distorted vision appear like sections of imported Swiss cheese. Excepting cysts, there are extremely few alveolar involvements which do not repair without surgical treatment after extraction of the teeth, and there is a characteristic aspect to septic crypts unlikely to be confused with harmless discrepancies in calcification by unbiased observers.

### **For Home and Country**

**Q.**—Is there great danger of becoming sterile from ordinary use of an x-ray machine? I have only had a machine two years, but I believe it is affecting me.

**A.**—All glandular tissue is highly sensitive to x-radiation, and sterility can be produced in either sex by moderate exposure. (This must not be misapplied in attempted birth control because it may react as a chastening boomerang in producing the effect by removing the cause.) The cumulative effect from the unprotected operation of x-ray equipment has resulted in temporary sterility, but in view of present knowledge and means of protection it would be considered gross negligence. It is probable that the exposed skin of the face and hands would be noticeably affected by injudicious exposure before less accessible organs, and doubtless you are unnecessarily alarmed.

If there is any doubt about your protective methods, a simple test will decide the question. With adhesive tape attach a coin to the front of a film packet facing the tube, in the location you occupy when exposures are made. If you operate the control from behind a screen, place the test packet back of the lead glass window because it is less radiopaque than the lead lined screen. If upon development the test films show the outline of the coin after one week's exposure to average operating, you are absorbing a dangerous radiation. In case the result of this test is negative, a similar one should be made for a month to insure safety over a period of years. Should either of the tests result in fogging of the film, additional protection should be provided.

The most important precaution is not to hold the films for the patient, or direct the primary rays through the cone toward yourself. Have your equipment so arranged that the cone is always directed from you when the tube is energized. Have the tube enclosed in a lead glass shield, because there is sufficient secondary radiation emitted from the back of the tube to disclose the bones of the hand through a fluoroscope. With the bowl type of shields fitted to separate tube stands, beware of the unenclosed back and the notch for the cathode end of the tube. Through the latter opening, primary rays escape which will quickly fog films at a distance of ten feet. When operating stand as far from the tube as convenience will permit, remembering that scattered radiation arises from the patient and all objects in range of the



rays. This action is especially marked in a dental operating room with the usual metal accessories near.

A lead lined screen or door offers the greatest degree of protection of the customary methods. When placed a few steps distant or preferably just inside an adjoining room, the lead glass window is the only questionable element of safety, but the use of a screen is effective only as one remains behind it while the tube is active. If the operator reaches beyond it for the controls or habitually grasps the edge of the screen with the hand, the exposed parts derive no benefit from the protection.

Vigilance must be maintained for the safety of other operators and assistants in the office. A tile wall is ample defense from ordinary radiation, but wood or glass partitions offer slight obstruction to the rays. The office arrangement often provides less protection for associates than the radiographer, by the primary rays being directed toward a secretary's desk or an-

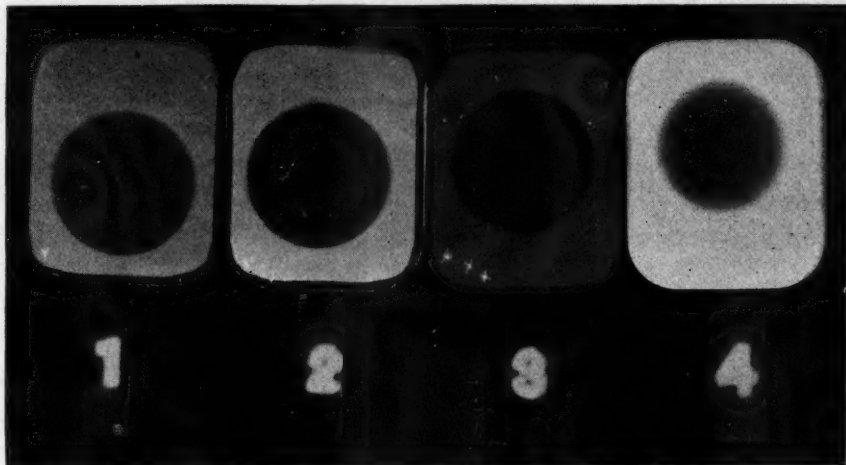


Fig. 6.—Tests of secondary and stray radiation. 1, Film with coin attached protected from the primary rays but exposed to secondary radiation from wood 6 inches from the film. 2, Radiographic image of coin produced by secondary rays from sheet steel 6 inches distant. 3, The result of secondary radiation from sheet lead 6 inches distant. 4, Radiogram of a coin by primary rays through an oak door 1 inch thick, two feet from the tube. A 30-second exposure was given in each test.

other operator beyond a light partition. A glaring example of criminal carelessness was that of a dentist who stated that he avoided the danger of injury by having his assistant hold the films for the patient. Assume such risks as you choose, but do not unscrupulously impose them upon some one who is ignorant of the danger, even if you are afflicted with the migratory species of assistants who do not remain long enough to either learn or "burn."

A microscopic examination will determine your present propagation status, and azoospermia or limited motility from radiation will probably be corrected by avoiding future exposure. Quite likely you are confusing sterility with impaired function or declining propensities, and charging x-rays with that which age and prodigality are responsible. The x-ray explanation for baldness and race suicide is more romantic than accurate, and however pardonable in sustaining domestic felicity should not result in self-deception.

## ABSTRACT OF CURRENT LITERATURE

Covering Such Subjects as

ORTHODONTIA — ORAL SURGERY — SURGICAL ORTHODONTIA — DENTAL RADIOGRAPHY

It is the purpose of this JOURNAL to review so far as possible the most important literature as it appears in English and Foreign periodicals and to present it in abstract form. Authors are requested to send abstracts or reprints of their papers to the publishers.

**On the Danger of Pulpless Teeth for the Organism.** E. Becker (Greifswald)  
Correspondenzblatt für Zahnärzte, January, 1922, xxxviii, 1.

This article is announced to be in part a criticism of some views expressed by Professor Fischer, the Cincinnati physiologist. The modern doctrine of a subacute or chronic dental sepsis causing infection of remote organs began with the Englishman Hunter about 1905, although since restricted very largely to American authors. Some years later Billings and Duke each wrote on the subject and the term focal infection came into general use. A flood of contributions has since appeared and one of the latest, by Martin Fischer (in 1921), has been translated into German. Germany during the past seven years has been more or less out of touch with American literature, so that the author feels handicapped in his account of the subject. But enough has reached Germany to make a number of converts to the theory of focal infection as a prolific cause of disease. The fallacy of this theory lies in the neglect to take into account the defensive forces of the economy. If the menace were what is claimed for it odontogenic arthritis would be one of the most common affections. A careful analysis of morbid material will show that only isolated cases of so-called focal infection occur, the majority being vitiated by errors of observation and reasoning. Focal infection has little in common with acute sepsis originating in the alveoli, tonsils and other localities in which we see metastatic lesions of vital organs and very frequently death from sepsis or pyemia. The author criticizes the type of case reported as focal infection. He quotes several without comment, implying that they refute themselves without any outside aid. In conclusion he quotes one American authority who states that the peak of the focal infection craze has been passed and that pulpless teeth are no longer a bugbear in medicine.

**Pulpotomy.** Editorial, Dental Items of Interest, February, 1922, xlv, 2.

The editor first calls attention to the indifference of many dentists when in attendance at congresses as to what they term "highbrow stuff". The latter

apparently includes all histology and pathologic anatomy in general. When papers on these subjects are on the program, certain members slip out to play Kelly pool or other game. But now and then the highbrow paper proves to contain something of vital importance for every day practice. Studies by Dr. Clyde Davis in the current number of the journal are of this type. Nominally they have to do with the formation of secondary cementum, but the question comes up of the optimum amputation of the living pulp, which according to Davis should be somewhere near the apex. The placing of the filling close to the amputated pulp stump will do away with the protrusion of gutta percha which is condemned by a number of progressive dentists. Dr. Davis is candid enough to admit that the question has not reached the final stage. The editor emphasizes the spontaneous natural defense of all tissues against injury from without or within; and in the case of death of the pulp this defense naturally consists in the formation of secondary cementum. Realization of this fact is of great importance for dental practice. It is assumed at the outset that no secondary cementum will be laid down in the presence of an infected pericementum. When the secondary cementum has been laid down the pulp will be found uninfected. There remains for consideration any condition in which the cementum has not yet formed but may form in the future. If the canal is empty beyond the partial root filling, as shown by repeated x-raying, the indication is to refill; but if the apex of the tooth appears to be solidified it should be let alone. The operation of unfilling and refilling is hazardous. In other cases already mentioned in which pulpotomy is indicated it must be borne in mind that the indication is not primarily to save the pulp, but to avoid injuring the pericementum.

**On the Connection Between Joint Affections and Dental Disease.** E. Plate  
(Hamburg) *Zahnaerztliche Rundschau*, March 3, 1922, xxxi, 8.

The author ascribes the recent interest among German dentists in this disease association to the translation into German of Professor Fischer's work on oral sepsis ("On infection of the buccal cavity and systemic disease"). On his first perusal of this work the author thought the case indubitably proved, but having subsequently taken up the subject with an experienced pathologic anatomist he has in part reversed his opinion although giving Fischer and his translator credit for attracting general attention to this subject, which is clearly a most difficult one to judge. To go back to an older subject—that of tonsillar infection of the general organism—we find the same difficulty and the same source of fallacy. In alleged infections of this nature the regional lymphnodes should be swollen but if we study the cases we will often find that this swelling was not in evidence. Whenever pathogenic germs have been taken up by the lymphatics it is the business of these glands as the first or at least second line of defense to show a defense reaction. Again in these cases bacteriologic proofs are completely lacking. The offending organisms should in theory be isolated and cultivated and inoculated successfully into laboratory animals. Instead we are to accept the evidence of x-ray shadows of alleged apical granulomata. On the other hand the treatment test cannot be ignored, and because



so many cases of joint and other affections have improved after procedures which sterilize the alveoli, the author in his brief summary admits that not a few cases of joint affections are of probable dental origin.

**Proprietary Rights of the Patient.** V. Jonas (Breslau). *Zahnaerztliche Rundschau*, January 31, 1922, xxxi, 5.

It occurs in the practice of every dentist that discarded crowns and pieces of bridge-work, as well as plates, are left behind by the patient. These may contain considerable gold and platinum and evidently the patient, perhaps while more or less excited, has merely neglected to take them along, and fails to mention that he does not care to keep them. After a reasonable delay the dentist throws them out, of course after salvaging the metals, which are incorporated with his regular stock. This experience is so common and widely spread that the dentist grows accustomed to it and after a time it will never occur to him that some of the patients might have continued to regard the articles in question as their personal property. There is often the question put to the dentist "can these crowns, etc., be utilized for further work?"; or perhaps the patient asks if he is entitled to any credit for the discarded gold. It is possible and proper to look at these questions from the strictly business angle. If the dentist states that the metal cannot be used again and the patient walk out without claiming his property, it is still legally his. On receiving a statement for a course of work the patient may ask if he has been credited with the discarded metal and in such a case the dentist should give a fully itemized statement, including credits if the patient is entitled to them. If in this connection the patient demand that the old metal be given him the dentist must comply. According to the laws portable property belongs to the original owner for 30 years. In case of a dispute with a client the latter may incidentally make a claim to property left behind years before. A case is given in which after a long interval a patient demanded a gold crown back. This happens continually. The dentist must give back the crown if he still has it; if not he must give another or the equivalent in money. If the man failed to pay for the extraction the dentist will still have to give him back the difference.

**Fatal Sepsis From a Bit of Straw in a Root Canal.** Guttmann (Heydekrug). *Zahnaerztliche Rundschau*, March 10, 1922, xxxi, 9.

On September 19, 1919 the author was consulted by a man of 37 years who requested the removal of a root. There was but little swelling and tenderness and no fluctuation, but the lymphnodes on both sides were somewhat swollen and there was a temperature. The pulse was small and rapid and the skin of the face showed a slight icteric hue. Three days before there had been a chill, and the jaws became partly locked, so that only liquid nourishment could be taken. The breath was very fetid. The only dental find was absence of the crown of the third left lower molar, with the roots slightly loosened in the alveolus and much overgrown by the gum. Caries had destroyed the entire tooth to the roots. The mouth was forcibly opened by a gag and held in this

position by a wedge, while with root forceps of proper curve the two roots were extracted. There was no escape of pus with the blood. No relief followed such as usually follows extraction in alveolar abscess. The extraction was done without anesthesia of any kind. There was no after-treatment, as no evidence of pent-up pus was forthcoming. In the mesial root was a bit of match wood and in the distal a bit of straw which may have been in position for 18 months, at which time patients had begun to use such objects to cleanse the cavity. In both roots the apices were necrotic and both were involved above in the carious process. Suppuration about the roots had evidently occurred repeatedly and finally a blind abscess had formed in the depth of the alveolus. Necrosis of the apex was the outcome of the alveolitis. The straw fragment appears to have inoculated the blood with the gangrenous infected tissue at the apex. The time of this infection was about ten days before extraction.

As the man was clearly in a septic condition he was sent to the district physician for treatment but did not go, perhaps because of a certain amount of relief experienced after extraction. Three days later chills reappeared and he sought the author again. He was hardly able to stand and was markedly icteric. The glands in the neck were greatly swollen but such was the apathy of the patient that he complained of nothing save pains in the chest and difficult breathing. He was interned in the district hospital with diagnosis of severe sepsis, and was given a single intravenous injection of colloidal silver. Then, ill as he was he managed to leave the hospital for his home. Three days after this experience the wife reported the death of the patient and as autopsy was refused, the exact mechanism of the death must be conjectural. Death had occurred five days after the extraction.

**Radiography of the Cranium and Face.** H. Josse (Paris). *Journal de Radiologie et d'Electrologie*, December, 1921, v, 12.

The article includes a paragraph on radiography of the maxillae. That of the superior maxilla is of course merged in radiography of the face and profile, and this is also true of the inferior maxilla. When one desires to obtain a radiograph limited to a portion of a maxilla, two methods may be employed according as the plate to be impressed is to be within or outside the mouth. If the former the tube always remains horizontal and one so disposes that the part of the maxilla to be investigated rests upon the plate. A stand with variable opening should be used and the head given the proper rotation, while a cork should be maintained between the dental arches. In this way one will almost always succeed in avoiding the projection of that half of the jaw turned toward the anticathode upon the part to be examined. One allows the normal ray to pass either between the cervical column and the angle of the lower jaw, at the level of the temporomaxillary articulation, or, more rarely, below the branch of the lower jaw which is closest to the anticathode. One may thus obtain excellent results and especially when one takes the precaution to place the radiogenic focus as near as possible to the head in order to avoid the side of the maxilla opposite the plate. The intrabuccal method is well developed by the Americans and in France by Belot.

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## EDITORIALS

### The F. A. C. D.

OCCASIONALLY we see in print following the name of some dentist, the letters "F.A.C.D.," meaning "Fellow of the American College of Dentists." There has been nothing in the dental profession that has been shrouded with so much mystery or has evoked so much criticism as the American College of Dentists.

We are informed that the American College of Dentists is an organization that was patterned after the American College of Surgeons, and the American College of Physicians. The value of the Fellowship of the American College of Dentists, depends, of course, upon the authority or standing of the organization granting that distinction. The dental profession, as a whole, knows very little about the American College of Dentists. The first information



obtained was from a small news article which appeared in the daily papers of Boston during the meeting of the National Dental Association in that city. It was stated that a certain group of men had organized the American College of Dentists. As we remember, three or four men were mentioned as organizers of the College, but the purpose and function was not clearly defined in the news article and is little understood by the profession today.

The dental profession as a whole adopted the plan of patiently waiting for more information in regard to why and what the American College of Dentists was, and about the only information they obtained was the occasional appearance in print of another name followed by "F.A.C.D."

The next question that arose and which we have heard asked many times was: How or why has this individual obtained an F.A.C.D.? Perhaps some of the criticism has originated from men who thought they should have an F.A.C.D., but some has been made in the spirit of constructive criticism and an honest attempt to obtain information.

It is our belief that it was the intention of the founders of the American College of Dentists to start an organization which would eventually render a definite service to dentistry by stimulating research work and urging men, particularly younger men, to pay greater attention to scientific investigations. In fact practically all that has been published relative to the American College of Dentists is found in the November, 1921 issue of the *National Dental Journal*. There is an article by Dr. C. N. Johnson entitled "Educational Ideals in Accordance with the Aspirations of the American College of Dentists."

There was also an item giving a brief history of the American College of Dentists and its scope, in which it is stated that the Fellowship would be conferred upon two groups of practitioners. The first group consists of "those members of the profession who have been at least ten years engaged in the practice of dentistry, whose efforts during that time have been loyally devoted to its advancement, and who are unquestionably looked upon as leaders in their respective communities. Time and effort devoted to teaching in dental schools, to presenting papers or clinics before dental societies, or to organization and executive work of a constructive character, as well as public services or civic duties, having a tendency to enlarge the usefulness or the public appreciation of dentistry, shall be taken into consideration when passing upon candidates of this group."

By the careful reading of these qualifications for membership in the first group, you will see that it takes in everybody in the profession and lays particular stress on "organization and executive work of a constructive character." This paragraph is one which from a scientific standpoint is extremely misleading because it allows everyone with political influence to become eligible for membership regardless of what he has done of a professional or scientific nature.

In considering the second group, we read that "the conferring of the Fellowship shall be held out as a stimulus to young men to induce them to engage more earnestly in those activities which tend to advance dentistry as

a profession and for which monetary remuneration must necessarily be sadly out of proportion to the time and effort expended. Devotion to teaching, especially to the nonclinical branches, to research work and to public education; as well as advanced work in the art, science or literature of dentistry, should be greatly encouraged as a consequence of this movement."

This second paragraph outlines the most laudable purpose of the American College of Dentists. In fact, if only this group of possibilities had been created, the American College of Dentists would have served a much better purpose.

After reading the purpose of the American College of Dentists as outlined, we fail to find any qualification for the Fellowship or any outline of work which must be done that will enable a young man to obtain the F.A.C.D.

The American College of Surgeons and the American College of Physicians have a definite set of qualifications which a young man or practitioner must fulfill, and have a plan whereby he can make a statement to the Board of Censors or Directors that he is going to do a certain amount of work and upon the completion of this work will be a candidate for the Fellowship. We believe the American College of Dentists should have a similar definite proposition to offer the young man and not such a vague plan as exists in their qualifications for the membership as outlined in the article published in the *National Dental Journal* of November, 1921.

We are perfectly aware of the fact that any attempt made towards the raising of the standing of the dental profession or towards perfecting an organization, the object of which would be the granting of a Fellowship for recognized and meritorious work will be open to criticism. We also realize that some one in the profession would have to start such an organization, but we are indeed sorry that the organizers of the American College of Dentists have made one error which seems to be almost inexcusable. We know of the plan whereby the American College of Dentists was organized by an original committee of four which later selected twenty-five men to assist them in perfecting the organization, after which we believe, twenty-five more men were selected because of their fitness and geographical location.

For the four men who started the American College of Dentists we have no personal criticism. They are undoubtedly leaders in the dental profession. All of them are known to us and we respect and revere them. Some of the twenty-five selected by this committee of four are also known to us. However, we believe the original committee, as well as the twenty-five selected, made a very serious mistake when they granted the Fellowship to themselves. This committee of four which called the organization together have done wonderful work for dentistry, but they would have gone down in history much more revered and respected if they had been content to have been known as the organizers of the American College of Dentists without having given the Fellowship to themselves. The greatest criticism that has been made by men in the profession is that the founders of the American College of Dentists granted Fellowships to themselves and that the original twenty-five men who

were selected to complete the organization also were granted the Fellowship. The original committee of four who organized the American College of Dentists have performed an act which is very much like a bank president lending money to *himself* and signing the note *himself* as security to the bank. Such things were formerly done in the financial world, but at the present day bank examiners and depositors are not in favor of such proceedings. In fact the bank president would be unwise to do such a thing because of the criticism that would be heaped upon him regardless of his financial ability in other lines.

It may be perfectly proper in the scientific and professional world for a group of men to organize a College and then grant fellowships to themselves, but it at least has created a criticism in the dental profession that refuses to be muffled, and will for a long time interfere with the beneficial development and good will of the American College of Dentists.

Other mistakes that have been made by the American College of Dentists have also been of such a nature as to have a definite influence upon the good purpose of the organization. Knowing the men connected with the organization as we do, we are convinced that the work which they have started will be a benefit to the profession, but very probably that benefit will be reaped after all of the present dental profession have passed away and the organizers of the American College of Dentists will have passed to their reward and be remembered only as organizers of the American College of Dentists and for the work they did for the profession, and not as F.A.C.D.'s.



## **ORTHODONTIC NEWS AND NOTES**

The editors desire to make this department a permanent feature of the Journal, but in order to do so must have the full support of the orthodontic profession throughout the country. We would deem it a great favor if our subscribers and readers would send in such announcements as might be of interest to the profession.

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### **The British Society for the Study of Orthodontics**

An ordinary meeting of the Society was held at 11 Chandos Street, Cavendish Square, W., on Monday, October 3rd, 1921, the President, Mr. J. Lewin Payne, in the chair.

The Minutes of the last meeting, held on May 9th, were read and confirmed.

Mr. Walter Crane's "Casual," "Replantation of an Upper Lateral," and the discussion, appear on page 407.

Mr. S. J. Steadman's "Casual," "A Case of Underhung Bite," and the discussion, appear on page 410.

Mr. W. Warwick James read a paper, "Treatment of Cases in which the Bite Is Too Close" (appears on page 411).

The following newly-elected members signed the obligation book and were formally admitted to membership of the Society: Mr. S. H. Roe and Mr. Barrington Eady.

The following were ballotted for and elected: Mr. Alexander B. Aldred, L.D.S.Eng., Mr. W. E. Coe, L.D.S.Eng., D.M.D.Harvard, Mr. W. W. Whittington, L.D.S., and Mr. A. G. Wilson, L.D.S.Glas., D.D.S.Penn.

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### **Notes of Interest**

Dr. John Milton Jones announces his removal to 7th Floor Orpheum Building, Wichita, Kansas. Orthodontia exclusively.